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PROCEEDINGS

OF THE

LITERARY AND PHILOSOPHICAL SOCIETY

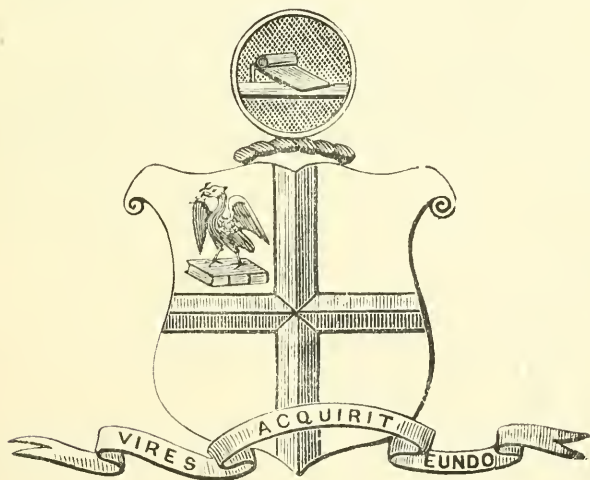
OF

LIVERPOOL,

DURING THE

SEVENTY-EIGHTH SESSION, 1888-89.

No. XLIII.



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of Comparative Zoology, *Harvard, Cambridge*,
Massachusetts.
- 22.—1874 Professor Frederick H. Max Müller, LL.D., *Oxford*.
- 23.—1874 Sir Samuel White Baker, Pasha, F.R.S., F.R.G.S., etc.,
Sandford Orleigh, Newton Abbot, Devonshire.
- 24.—1877 The Earl of Crawford and Balcarres, F.R.S., Foreign
Secretary of R.A.S., etc., 9 *Grosvenor-square*,
London.
- 25.—1877 Albert C. N. Günther, M.A., M.D., Ph.D., British
Museum.
- 26.—1877 Adolphus Ernst, M.D., Principal of the Department of
Science, Philosophy, and Medicine, University
of Caracas.
- 27.—1877 Dr. Leidy, Academy of Science, *Philadelphia*.
- 28.—1877 Dr. Franz Steindachner, Royal and Imperial Museum,
Vienna.
- 29.—1877 The Rev. H. B. Tristram, M.A., LL.D., F.R.S., Canon
of Durham, *the College, Durham*.
- 30.—1881 H. J. Carter, F.R.S., *The Cottage, Budleigh Salterton*,
Devon.
- 31.—1881 The Rev. Thomas Hineks, B.A., F.R.S., *Stokeleigh*,
Leigh Woods, Clifton, Bristol.
- 32.—1881 The Rev. W. H. Dallinger, LL.D., F.R.S., P.R.M.S.,
Ingleside, Lee, London, S.E.

CORRESPONDING MEMBERS.

LIMITED TO THIRTY-FIVE.

- 1.—1867 J. Yate Johnson, *London*.
- 2.—1867 R. B. N. Walker, F.R.G.S., F.G.S., *West Africa*.
- 3.—1868 Rev. J. Holding, M.A., F.R.G.S., *London*.
- 4.—1868 George Hawkins, *Colombo, Ceylon*.
- 5.—1868 J. Lewis Ingram, *Bathurst, River Gambier*.
- 6.—1869 George Mackenzie, *Cebu, Philippine Islands*.
- 7.—1870 The Venerable Archdeacon Hughes-Games, D.C.L.,
Isle of Man.
- 8.—1874 Samuel Archer, Surgeon-Major, *Singapore*.
- 9.—1874 Coote M. Chambers, *Burrard's Inlet, British Columbia*.
- 10.—1874 Edwyn C. Reed, *Santiago de Chili*.
- 11.—1874 Millen Coughtrey, M.D., *Dunedin, Otago, New Zealand*.
- 12.—1875 Robert Gordon, Government Engineer, *British Burmah*.
- 13.—1877 Edward Dunkinfield Jones, C.E., *Sao Paulo, Brazil*.
- 14.—1877 Miss Horatio K. F. Gatty, *Altrincham*.
- 15.—1877 Dr. Allen, *Jamaica*.
- 16.—1877 Dr. George Bennett, *Sydney*.
- 17.—1877 Dr. David Walker, *Benicia, U.S.A.*
- 18.—1883 Wm. Henry Finlay, *Cape Town Observatory*.
- 19.—1884 Rev. W. G. Lawes, *New Guinea*.
- 20.—1884 A. W. Crawford, *Oakland, California*.
- 21.—1884 John Greenwood, Mining Engineer, *Melbourne*.
- 22.—1884 Robert Abraham English, *Simla*.
- 23.—1887 Rev. S. Fletcher Williams, 48 *Westbourne Grove*,
Scarborough.

ASSOCIATES.

LIMITED TO TWENTY-FIVE.

- 1.—Jan. 27, 1862 Captain John H. Mortimer, “America.”
(Atlantic.)
- 2.—Mar. 24, 1862 Captain P. C. Petrie. (Atlantic.)
- 3.—Feb. 9, 1863 Captain John Carr, ship “Scindia.” (Calcutta.)
- 4.—Feb. 9, 1863 Captain Charles E. Price, R.N.R., ship
“Cornwallis.” (Calcutta and Sydney.)
- 5.—April 20, 1863 Captain Fred. E. Baker, ship “Nippon.”
(Chinese Seas.)
- 6.—Oct. 31, 1864 Captain Thomson, ship “Admiral Lyons.”
(Bombay.)
- 7.—April 13, 1865 Captain Alexander Cameron, ship “Staffordshire.” (Shanghai.)
- 8.—Dec. 11, 1865 Captain Walker, ship “Trenton.”)
- 9.—Mar. 23, 1868 Captain David Scott.
- 10.—April 7, 1884 Captain G. Griffith Jones, barque “Hermine.”
- 11.—Dec. 13, 1886 Captain W. C. Seabrook, Liskeard, ship
“Lord Lytton.”

LIST OF BOOKS

PRESENTED TO THE SOCIETY'S LIBRARY DURING THE
SEVENTY-EIGHTH SESSION, 1888-89.

A.

Abbeville, Société d'Émulation. Bulletin des Procès Verbaux, 1886-87.

Amsterdam, Königliche Akademie van Wetén. Jaarboek 1886-87.

Verslagen en Mededeelingen : Letterkunde, iii-4 ; Naturkunde, iii-3, 4 ; Latin Prize Poems : " Me Puero " ; " Ad Urbem Bonomiam " ; " Matris Querela " ; " Esther " ; " Susanna."

Anthropological Institute of Great Britain and Ireland. Journal.

Antiquaries, Society of, London. Proceedings.

Antiquaires, du Nord, Société Royale des, Copenhagen. Mémoires.

Archæological and Historical Society, Chester. Journal, Session 1886-87.

Archæological and Natural History Society, Somersetshire. Proceedings.

Architects, Royal Institute of British, London. Journal of Proceedings, vol. iv-19, 20 ; v-1-18. Transactions, vol. iv. Kalendar, 1889. Papers : " Conservation of Ancient Monuments," and " Hints to Workmen."

Arts, Society of, London. Journal to date.

Arts, Royal Scottish Society of, Edinburgh. Transactions.

Asiatic Society of Great Britain and Ireland, Royal, London. Transactions.

Asiatic Society of Bengal, Calcutta. Journal : Philology, lvii-1, 2 ; Natural History, lvii-2, 3, 4, 5 ; Proceedings.

- Astronomical Society, Royal, London. Monthly Notices.
Astronomical Society, Liverpool. Journal and List of Members.
Astronomer Royal. Greenwich Observations, 1886 : Cape Observations, 1882-84 ; Cape Annals, vol. ii, part 2.

B.

- Birkenhead Literary and Scientific Society. Report, Session 1888-89 ; President's Address.
Bordeaux, Société des Sciences Physiques et Naturelles ; Mémoires.
Boston, U.S., American Academy of Arts and Sciences. Proceedings.
British Museum. Catalogue of Birds, vol. xiv ; Catalogue of Chelonians, 1889 ; Catalogue of Marsupialia, 1888 ; Catalogue of Fossil Cephalopoda, part i, 1888 ; Catalogue of Fossil Fishes, part i, 1889 ; Catalogue of Fossil Reptiles and Amphibia, parts i, ii.

C.

- Canadian Institute, Toronto. Proceedings ; Annual Report, 1888.
Carruthers, Rev. G. T. Pamphlets : "The Planets upon Car-dioides" ; "The Cause of Light" ; "The Cause of Electricity, with Remarks upon Chemical Equivalents."
Chemical Society, London. Abstracts, 59-71 ; Journal and Index.
Chester, Society of Natural Science and Literature. Report, &c., 1888-89.
Connecticut Academy of Arts and Sciences. Transactions.
Copenhagen, Académie Royale. Bulletin.
Cornwall, Royal Institution of. Journal.

E.

- Engineering Society, Liverpool. Transactions, 1887.
Engineers, Institute of Civil, London. Minutes of Proceedings, vols. xciv, xcv, xevi. Brief Index.
Engineers' Report, 1888, U.S. Army, Chief of, 4 vols.

F.

Finnish Scientific Society, Helsingfors. Proceedings, xviii, xix ;
Acta, tomus xv ; Finlands Natur och Folk, heft 4, 5, 6, 7 ;
Organisation and Work, 1838-1858.

G.

Geographical Society, Royal, London. List of Fellows.
Geographical Society, American, New York. Bulletin.
Geographical Society of Australasia, Royal, Queensland Branch.
Proceedings and Transactions, 1887-88.
Geologists' Association, London. Proceedings.
Geological Association, Liverpool. Journal, 1887-88.
Geological Society, London. Quarterly Journal ; List of Mem-
bers, &c.
Geological Society, Royal, of Ireland. Proceedings.
Geological Society, Edinburgh. Transactions.
Geological Society, Glasgow. Transactions.
Geological and Polytechnic Society, Yorkshire. Proceedings.
Geological Survey of India. Records, vol. xxi-3, 4 ; xxii-1, 2.
Geological Survey of U.S. America. Monograph, xii (Leadville)
and Atlas ; Bulletin, no. 40 to 47 ; Mineral Resources, 1887.
Geology, a Bibliography of Indian, by R. D. Oldham, F.G.S.
Glasgow Philosophical Society. Proceedings, 1887-88.

H.

Hardwicke's " Science Gossip," to date.
Haarlem, Société Hollandaise des Sciences ; Archives Néerlandaises.
Harvard College Report, 1887-88.
Harvard University Bulletin.
Harvard Museum of Comparative Zoology. Bulletin, vol. xiii-10 ;
xiv and xv (Cruises of the " Blake ") ; xvi-2, 3, 4, 5 ; xvii-1,
2, 3 ; Memoirs, xiv, no. 1, part ii-1 (Development of Osseous
Fishes).

Health Report, Liverpool, 1888.

Historical and Archæological Collections of Montgomeryshire.

I.

India, East, Association, London. Journal.

India, Great Trigonometrical Survey, vol. x (Telegraphic Longitude Operations).

Insectos Dípteros de Chile, Catalogo, por E. C. Reed.

Irish Academy, Royal. Proceedings and Transactions.

J.

Japan, Imperial University of. Kalendar, 1888-89.

K.

Königsberg Physikalisch-ökonomische Gesellschaft. Schriften, 1888.

L.

Leeds, Philosophical and Literary Society. Report, 1888-89.

Leicester Literary and Philosophical Society. Transactions.

Library Report, Astor, New York, 1888.

Library Report, Liverpool Free Public.

Library Report, Manchester Free.

Linnean Society, London. Journal: Botany, 156, 157, 162, 164, 165, 166, 167, 168, 169, 170, 171, 173; Zoology, 119, 120, 121, 132. List of Members, &c.

Liverpool Philomathic Society. Proceedings, 1887-88.

Liverpool Science Students' Association. Report, &c., 1888.

M.

Manchester Literary and Philosophical Society. Memoirs and Proceedings, vol. xxxi.

- Medical and Chirurgical Society, Royal, London. Proceedings ; Transactions, vol. lxxi.
- Meriden Scientific Association. Transactions, 1887-88.
- Meteorological Society, Royal, London. Quarterly Journal.
- Meteorological Society of Scotland. Journal, 1887.
- Commission Météorologique de la Gironde. Observations Pluviométriques et Thermométriques, 1886-87.
- Meteorology, Contributions to, by E. Loomis, chap. iii.
- Microscopical Society, Royal, London. Journal.
- Milan, Reale Istituto Lombardo. Rendiconti, xx ; Memorie xiv-2, xviii-1.

N.

- Natural History and Antiquarian Field Club, Bath. Proceedings.
- Natural History Society and Field Club, Hertfordshire. Transactions.
- Natural History, Society of, Boston, U.S. Proceedings.
- Natural History, Transactions of, Northumberland, Durham, and Newcastle-on-Tyne.
- "Naturalist" and "American Naturalist" to date.
- Naturalists' Club, Berwickshire. Transactions, 1877-88.
- Naturalists' Field Club, Belfast. Report, &c., 1887-88.
- Naturalists' Field Club, Liverpool. Proceedings, 1888.
- Naturalists' Society, Bristol. Proceedings, vol. v-1, 2.
- Naturalistes, Société des, Kieff. Mémoires, ix-1, 2 ; x-1.
- "Nature" to date.
- Naturforsker, Scandinaviske. Forhandler, 1886.
- "Nunel Valemik" (a monthly Volapük Journal). No. 1.

O.

- Ordnance Report, U.S. Army. 1888.

P.

- Peabody Museum, Cambridge, U.S. Report, 1888 ; Archæological and Ethnological Papers, no. 1.

- Philadelphia, U.S., Academy of Natural Sciences. Journal.
 Philadelphia, American Philosophical Society. Transactions ;
 Supplementary Report on International Language ; Magel-
 lanic Premium Rules ; Philipps' Prize Essay Fund Rules.
 "Philadelphia Folklore," by H. Philipps.
 Philadelphia, Franklin Institute. Journal.
 Philadelphia Societies' Constitution Celebration Banquet.
 Physical Society, Royal, London. Proceedings, 1887-88.
 Physique et d'Histoire Naturelle, Société de, Genève.
 Plymouth Institute. Report and Transactions, 1888-89.
 Polytechnic Society, Royal, Cornwall. Report, 1888.
 Polytechnic Society, Liverpool. Journal, 1887-88.

R.

- Royal Institution of Great Britain and Ireland. Proceedings.
 Royal Society. Proceedings, nos. 270 to 281.
 Royal Society of Canada. Proceedings and Transactions, 1887.
 Royal Society of N.S. Wales. Journal and Proceedings.
 Royal Society of Victoria. Transactions and Proceedings.

S.

- Salem, U.S., Essex Institute. Bulletin.
 Smithsonian Institution, Washington, U.S.A. Miscellaneous Col-
 lections, xxxii-xxxiii.
 Statistical Society, Royal, London. Journal, 1888-89 ; Index,
 1873-87.
 St. Petersburg Académie Impériale des Sciences. Bulletin.
 Strassburg University. Forty-seven Doctoral Theses, viz:—
 De jurandi apud Athenienses formulis ; De Aesculapi Figura ;
 De scholiis Theocriteis vetustioribus ; De doctrinae metricae ab
 Eustathio servatis ; Quaestiones Plautinae de pronomibus.
 Die Mundart des Kantons Falkenberg (Lothringen) ; Der
 Elsassische Dichter, Hans v. Büchel ; Ueber die Syntax des
 Italienischen des xiii Jahrhunderts ; Shakspeare's Metrik ;

Richard von Cornwall; Laute und Lautentwicklung des Sicilianischen Dialektes; Kunstausdrücke der Meistersinger; Poetik Bodmers und Breitingers; Das erste Stadium des I-Umlants im Germanischen; C und Ch vor Lateinischen A. im Altfranzösischen; Das lateinische sufix—*alis* im Französischen; Ueber Gebrauch und Stellung des Adjectivums in Wolfram's "Parzival;" Ueber die Endungen des Praesens im Altprovenzalischen; Zu dem mittellenglischen Fabliau "Dame Siriz;" Ueber die Abhängigkeit Locke's von Descartes.

Zur Geschichte Alexander's II; Conrad von Scharfenberg, Hofkanzler, 1200–1224; Clemens VII und Karl V; Die Schlacht bei Prag, am 6 Mars, 1757.

Ueber quadratische Strahlencomplexe; Zur Theorie der linearen Substitutionen; Ueber beide specifische Wärme des Wasserdampfs; Ueber eine neue Säure; Dampfspannungen von Salzlosungen; Condensation von Acetessigester, 2; Ueber Zerstäuben einer Kathode; Ueber neue Synth. mit Oxal. u. Malonsäureester; Einwirkung von Butyraldehyd auf Bernsteinsäures Natrium; Zur Constitution der Vinaconsäure; Polarisation in Cobalt und Nickel; Abkühlung der Kohlensäure bei Ausdehnung; Phasenänderung des Lichtes bei Reflexion; Wind und Meeresströmungen im Gebiet der kleinen Sunda Inseln; Winden en Regenverdeeling over Sumatra; Submarine Erdbeben und Eruptionen; Aenderung der Gleichgewichtsflächen der Erde; Zur Kenntniss des Drachenblutes; Zur Kenntniss der Athmungsorgane der Pflanzen; Zur Entwicklungsgeschichte der Pyrenomyceten; Ueber die Bäume der Aegyptischen Texten; Zur Kenntniss des Japanesischen Klebreises.

V.

Victorian Year-Book, 1887–88.

Vienna, Königliche Akademie der Wissenschaften. Math.-naturwiss Classe, Anzeiger; Phil.-Hist. Classe, Berichte, Bl. cxiv–2, cxv, cxvi.

Y.

York, New, Academy of Sciences. Annals, vol. iv-5, 6, 7, 8;
Transactions, vii-3-8.

Z.

Zealand, New, Institute. Transactions and Proceedings, 1887 and
1888.

Zoological Society, London. Proceedings.

Zoological Society, Philadelphia. Report.

Zoology of Victoria, Prodromus of the, parts xvi, xvii.

Zoology, see under Harvard Museum, Linnean Society, Natural
History Societies, etc.

SOCIETIES, ACADEMIES, AND OTHER INSTITUTIONS

TO WHICH THIS VOLUME IS PRESENTED.

GREAT BRITAIN AND IRELAND.

<i>Aberdeen</i>	- - -	The Dun-Echt Observatory.
<i>Alnwick</i>	- - -	The Berwickshire Naturalists' Field Club.
<i>Bath</i>	- - - -	The Natural Historical and Antiquarian Field Club.
<i>Belfast</i>	- - -	The Naturalists' Field Club.
<i>Belfast</i>	- - - -	The Natural History and Philosophical Society.
<i>Birkenhead</i>	- - -	The Free Public Library.
<i>Birkenhead</i>	- - -	The Literary and Scientific Society.
<i>Birmingham</i>	- -	The Philosophical Society.
<i>Bootle</i>	- - -	The Free Public Library.
<i>Bristol</i>	- - -	The Naturalists' Society.
<i>Buckhurst Hill</i>	- -	The Epping Forest Naturalists' Field Club.
<i>Chester</i>	- - -	The Society of Natural Science.
<i>Cambridge</i>	- - -	The Cambridge Union.
<i>Dublin</i>	- - -	The Royal Irish Academy.
<i>Dublin</i>	- - -	The Royal Geological Society of Ireland.
<i>Dublin</i>	- - -	The Royal Society.
<i>Edinburgh</i>	- - -	The Botanical Society.
<i>Edinburgh</i>	- - -	The Geological Society.
<i>Edinburgh</i>	- - -	The Meteorological Society of Scotland.
<i>Edinburgh</i>	- - -	The Philosophical Institution.
<i>Edinburgh</i>	- - -	The Royal Observatory.
<i>Edinburgh</i>	- - -	The Royal Physical Society.
<i>Edinburgh</i>	- - -	The Royal Scottish Society of Arts.

<i>Edinburgh</i>	-	-	-	The Royal Society.
<i>Falmouth</i>	-	-	-	The Royal Cornwall Polytechnic Society.
<i>Glasgow</i>	-	-	-	The Philosophical Society.
<i>Glasgow</i>	-	-	-	The Geological Society.
<i>Glasgow</i>	-	-	-	The University.
<i>Greenwich</i>	-	-	-	The Royal Observatory.
<i>Halifax</i>	-	-	-	The Literary and Philosophical Society.
<i>Hull</i>	-	-	-	The Literary and Philosophical Society.
<i>London</i>	-	-	-	The Anthropological Institute.
<i>London</i>	-	-	-	The Society of Antiquaries.
<i>London</i>	-	-	-	The Royal Institute of British Architects.
<i>London</i>	-	-	-	The Society of Arts.
<i>London</i>	-	-	-	The Royal Asiatic Society.
<i>London</i>	-	-	-	The Royal Astronomical Society.
<i>London</i>	-	-	-	The British Association.
<i>London</i>	-	-	-	The British Museum.
<i>London</i>	-	-	-	The Chemical Society.
<i>London</i>	-	-	-	The Royal Geographical Society.
<i>London</i>	-	-	-	The Geological Society.
<i>London</i>	-	-	-	The Geologists' Association.
<i>London</i>	-	-	-	The Institution of Civil Engineers.
<i>London</i>	-	-	-	The East Indian Association.
<i>London</i>	-	-	-	The Linnæan Society.
<i>London</i>	-	-	-	The Meteorological Society.
<i>London</i>	-	-	-	The Society for Psychical Research.
<i>London</i>	-	-	-	The Royal Microscopical Society.
<i>London</i>	-	-	-	The Royal Medico-Chirurgical Society.
<i>London</i>	-	-	-	The Royal Society.
<i>London</i>	-	-	-	The Royal Institution.
<i>London</i>	-	-	-	The Royal Society of Literature.
<i>London</i>	-	-	-	The Statistical Society.
<i>London</i>	-	-	-	The Zoological Society.
<i>London</i>	-	-	-	The Editor of "Nature."
<i>London</i>	-	-	-	The Editor of the "Journal of Science."
<i>London</i>	-	-	-	The Editor of "Science Gossip."
<i>London</i>	-	-	-	The Editor of the "Scientific Roll."

<i>Leeds</i>	- - - -	The Philosophical and Literary Society.
<i>Leeds</i>	- - - -	The Yorkshire Geological and Polytechnic Society.
<i>Leicester</i>	- - -	The Literary and Philosophical Society.
<i>Liverpool</i>	- - -	The Architectural and Archæological Society.
<i>Liverpool</i>	- - -	The Astronomical Society.
<i>Liverpool</i>	- - -	The Chemists' Association.
<i>Liverpool</i>	- - -	The Engineering Society.
<i>Liverpool</i>	- - -	The Geological Society.
<i>Liverpool</i>	- - -	The Geological Association.
<i>Liverpool</i>	- - -	The Historic Society of Lancashire and Cheshire.
<i>Liverpool</i>	- - -	The Microscopical Society.
<i>Liverpool</i>	- - -	The Naturalists' Field Club.
<i>Liverpool</i>	- - -	The Philomathic Society.
<i>Liverpool</i>	- - -	The Polytechnic Society.
<i>Liverpool</i>	- - -	The Athenæum Library and News Room.
<i>Liverpool</i>	- - -	The Free Public Library.
<i>Liverpool</i>	- - -	The Liverpool Library.
<i>Liverpool</i>	- - -	The Lyceum News Room.
<i>Liverpool</i>	- - -	The Medical Institution.
<i>Liverpool</i>	- - -	The Royal Institution.
<i>Liverpool</i>	- - -	University College.
<i>Manchester</i>	- - -	The Literary Club.
<i>Manchester</i>	- - -	The Literary and Philosophical Society.
<i>Manchester</i>	- - -	Chetham Library.
<i>Manchester</i>	- - -	The Free Public Library.
<i>Manchester</i>	- - -	Owens College.
<i>Newcastle-on-Tyne</i>	-	The Natural History Society of Northumberland and Durham.
<i>Oxford</i>	- - - -	The Ashmolean Society.
<i>Oxford</i>	- - - -	The Union Society.
<i>Penzance</i>	- - -	The Royal Geological Society of Cornwall.
<i>Plymouth</i>	- - -	The Plymouth Institution.
<i>Taunton</i>	- - - -	The Somersetshire Archæological Society.
<i>Truro</i>	- - - -	The Royal Institution of Cornwall.

<i>Watford</i>	-	-	-	The Hertfordshire Natural History Society and Field Club.
<i>Welshpool</i>	-	-	-	The Powys-Land Club.
<i>Whitby</i>	-	-	-	The Literary and Philosophical Society.

BRITISH COLONIES AND THE UNITED STATES.

<i>Bombay</i>	-	-	-	The Royal Asiatic Society.
<i>Boston</i>	-	-	-	The American Academy of Arts and Science.
<i>Boston</i>	-	-	-	The Massachusetts Board of Education.
<i>Boston</i>	-	-	-	The Massachusetts Board of Health, Lunacy, and Charity.
<i>Boston</i>	-	-	-	The Natural History Society.
<i>Boston</i>	-	-	-	The Public Library,
<i>Buffalo</i>	-	-	-	The Society of Natural Sciences.
<i>Calcutta</i>	-	-	-	The Asiatic Society of Bengal.
<i>Calcutta</i>	-	-	-	The Geological Survey of India.
<i>Cambridge (Mass)</i>	-			Harvard University.
<i>Cambridge (Mass)</i>	-			Museum of Comparative Zoology.
<i>Cambridge (Mass)</i>	-			The Peabody Museum of American Archæo- logy and Ethnology.
<i>Chicago</i>	-	-	-	The Public Library.
<i>Davenport</i>	-	-	-	The Academy of Natural Sciences.
<i>Melbourne</i>	-	-	-	The Royal Society of Victoria.
<i>New Haven</i>	-	-	-	The Connecticut Academy of Arts and Sciences.
<i>New York</i>	-	-	-	The Academy of Sciences.
<i>New York</i>	-	-	-	The Astor Library.
<i>New York</i>	-	-	-	The American Geographical Society.
<i>New York</i>	-	-	-	The City University.
<i>New York</i>	-	-	-	The State University.
<i>New York</i>	-	-	-	The State Library.
<i>New York</i>	-	-	-	The American Museum of Natural History.
<i>Otago</i>	-	-	-	The University.

<i>Ottawa</i>	- - -	Geological and Natural History Survey.
<i>Ottawa</i>	- - -	The Library of Parliament.
<i>Philadelphia</i>	- -	The Academy of Natural Sciences.
<i>Philadelphia</i>	- -	The American Philosophical Society.
<i>Philadelphia</i>	- -	The Franklin Institute.
<i>Philadelphia</i>	- -	The Pennsylvania Board of Public Education.
<i>Philadelphia</i>	- -	The Zoological Society.
<i>Salem</i>	- - -	The American Association for the Advancement of Science.
<i>Salem</i>	- - -	The Essex Institute.
<i>San Francisco</i>	- -	The Lick Observatory.
<i>Sydney</i>	- - -	The Royal Society of New South Wales.
<i>Sydney</i>	- - -	The Department of Mines.
<i>Toronto</i>	- - -	The Canadian Institute.
<i>Washington</i>	- - -	The Department of Agriculture.
<i>Washington</i>	- - -	The Geological and Geographical Survey of the Territories.
<i>Washington</i>	- - -	The Naval Observatory.
<i>Washington</i>	- - -	The Smithsonian Institution.
<i>Washington</i>	- - -	The Department of Ordnance; the Department of the Chief of Engineers; the Department of Agriculture; the Department of the Interior.
<i>Wellington</i>	- - -	The New Zealand Institute.

 FOREIGN.

<i>Amsterdam</i>	- - -	L'Académie Royale des Sciences.
<i>Antwerp</i>	- - -	Antwerp Literary Society.
<i>Berlin</i>	- - -	Die Akademie der Wissenschaften.
<i>Bordeaux</i>	- - -	La Société des Sciences Physiques et Naturelles.
<i>Brussels</i>	- - -	L'Académie Royale des Sciences, des Lettres, et des Beaux-Arts de Belgique.

<i>Cherbourg</i>	-	-	-	La Société Nationale des Sciences Naturelles.
<i>Christiania</i>	-	-	-	The University.
<i>Copenhagen</i>	-	-	-	L'Académie Royale.
<i>Copenhagen</i>	-	-	-	La Société Royale des Antiquaires du Nord.
<i>Geneva</i>	-	-	-	La Société de Physique et d'Histoire Naturelle.
<i>Gottingen</i>	-	-	-	Die Königliche Gesellschaft des Wissenschaften.
<i>Grieswald</i>	-	-	-	The University.
<i>Harlem</i>	-	-	-	La Société Hollandaise des Sciences.
<i>Helsingfors</i>	-	-	-	La Société des Sciences de Finlande.
<i>Kief</i>	-	-	-	La Société des Naturalistes.
<i>Königsberg</i>	-	-	-	Die Königliche Physikalische-ökonomische Gesellschaft.
<i>Milan</i>	-	-	-	Il Reale Istituto Lombardo.
<i>Munich</i>	-	-	-	Die Königliche Akademie der Wissenschaften.
<i>Paris</i>	-	-	-	L'Ecole Polytechnique.
<i>Presburg</i>	-	-	-	Der Verein für Natur- und Heil-Kunde.
<i>St. Petersburg</i>	-	-	-	L'Académie Imperiale des Sciences.
<i>Stockholm</i>	-	-	-	L'Académie Royal Suedoise des Sciences.
<i>Strasburg</i>	-	-	-	La Bibliothèque Municipale.
<i>Strasburg</i>	-	-	-	De Kaiserliche Universitäts und Landes-Bibliothek.
<i>Tokio</i>	-	-	-	The University.
<i>Toulouse</i>	-	-	-	L'Observatoire Astronomique.
<i>Vienna</i>	-	-	-	Die Kaiserliche Akademie der Wissenschaften.
<i>Vienna</i>	-	-	-	Die Geographische Gesellschaft.

TREASURER'S ACCOUNT, 1887-88.

Dr.

The LITERARY AND PHILOSOPHICAL SOCIETY, in Account with F. W. EDWARDS, Treasurer.

Cr.

1887-88.				1887-88.				
To Cash paid Rent of Royal Institution	£	s.	d.	Balance from 1886-87	£	s.	d.	
" " Refreshments and Attendance	20	0	0	Biology Report Sales	49	8	1	
" " Printing Circulars	25	2	8	By Cash from Subscriptions:—	6	9	0	
" " Editorial Fee	9	18	0	6 Entrance Fees, at 10s. 6d.	£3	3	0	
" " Secretary's Expenses	10	10	0	150 Annual Subscriptions, at 21s.	157	10	0	
" " Treasurer's "	12	3	3	1 Arrear, at 21s.	1	1	0	
" " Librarian's "	3	17	6		—	161	14	0
" " Stationery, &c.	2	10	0					
" " Sundries	14	11	0					
" " Printing and Binding Vol. XLII.	0	5	9					
Balance	88	4	0					
	30	8	11					
	<u>£217 11 1</u>							
				</				

PROCEEDINGS
OF THE
LIVERPOOL
LITERARY AND PHILOSOPHICAL SOCIETY.

ANNUAL MEETING.—SEVENTY-EIGHTH SESSION.

ROYAL INSTITUTION, October 1st, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

The Minutes of the last Meeting of the previous Session were read and confirmed.

The Honorary Secretary read the following

REPORT.

The Seventy-Seventh Session of the Society has been one of continued prosperity.

The Volume of *Transactions*, which is larger than usual, is in the press, and will shortly be issued to the Members.

The Council notes with pleasure that all the papers contributed to the proceedings have been of great interest, and have induced considerable discussion, and that some of the papers printed are of exceptional value.

The continued good attendance at the meetings causes much satisfaction. Fourteen Ordinary Meetings were held during the past Session, with an average attendance of 82.

The scheme for the Amalgamation of the Libraries of the

various Societies meeting in the Royal Institution, mentioned in the last Report, has been carried to a successful issue.

The Libraries have been placed under the management of a Joint Committee of the Societies and the Royal Institution, upon which Committee this Society is represented by the Librarian.

In furtherance of the plan of partial amalgamation of Societies, detailed in the last report, the Council invited the co-operation of several of the kindred Societies.

A joint meeting of this Society with the Liverpool Astronomical Society, was held on November 14th, 1887, at which all the papers were read by members of the Astronomical Society; the attendance was very large, and the meeting was in every respect successful.

A joint meeting was arranged with the Polytechnic Society, but unfortunately had to be postponed.

It is hoped that the scheme of partial amalgamation will not be allowed to lapse during the coming Session.

The number of the members has suffered a slight decrease. Since the last Annual Meeting nineteen ordinary members have resigned, and one has died. There have been added seven Ordinary Members and one Corresponding Member.

Amongst the resignations must be noticed that of Dr. John W. Hayward, for many years one of the Council, and a frequent contributor to the Societies proceedings.

The Council have also to record the death of a distinguished Honorary Member, Professor F. V. Hayden, Director of U.S. Geological and Geographical Survey of the Territories; and also the death of Mr. Alfred Morgan, a former Hon. Librarian of the Society.

The Society now consists of 171 Ordinary Members, 32 Honorary Members, 23 Corresponding Members, and 12 Associates.

The Report was passed on the motion of Mr. BARON L. BENAS, seconded by Mr. MARPLES.

The HONORARY TREASURER'S Annual Statement of Accounts was then read, and was adopted on the motion of Mr. MARPLES, seconded by Mr. GUTHRIE.

The following Office Bearers were then elected: Vice-Presidents—Isaac Roberts, F.G.S., F.R.A.S., J. Sibley Hicks, F.R.C.S., F.L.S., Principal Rendall, M.A.; Hon. Treasurer—Frederick W. Edwards, M.S.A.; Hon. Secretary—John Rutherford, LL.B.; Hon. Librarian—R. McLintock.

The following Ordinary Members of Council were also elected: Miss Cradock, L.K.Q.C.P.I., Baron L. Benas, W. Watson Rutherford, Josiah Marples, John Newton, M.R.C.S., Chas. J. English, Gilbert M. Steeves, H. Longuet Higgins, Malcolm Guthrie, Rev. J. Polack, B.A., J. M. McMaster, G. Henry Morton, R. J. Lloyd, M.A., W. Walthew.

The Associates of the Society were re-elected.

The subscription for Ladies was fixed at 10s. 6d. per annum, and the Rules were altered to that effect.

Mr. JAMES BIRCHALL, the President, delivered his Second Presidential Address, on "The Church and the State in Mediæval Europe—The Church and the Empire."*

FIRST ORDINARY MEETING.

ROYAL INSTITUTION, October 15th, 1888.

MR. JAMES BIRCHALL, President, in the Chair.

Mr. Walter Norris Jones was duly elected an Ordinary Member.

* See page 1.

The Rev. H. H. HIGGINS exhibited and described some Rare Plants from the Botanic Gardens (lent by the Curator).

The Rev. H. H. HIGGINS read the following paper on

THE RARER METALS AND EARTHS.

(With illustrations.)

THE ELEMENTS.

The elementary bodies brought before you this evening depend for little of their interest on characters conspicuous to the eye.

Their original atoms accomplished stupendous primary functions altogether unseen. Some of them are invisible at ordinary temperatures; many are not found pure, *i.e.*, uncombined with other substances, and can only be obtained pure by an elaborate process which is very costly.

The atoms, though inconceivably minute, possess strong individual characters, and if we realise all that an element has done in the formation of earth, and sea, and air, and bring to aid our conception the fact that myriads of perfect atoms, with all their characters complete, are before us in a test-tube, which possibly looks quite empty—if we do this without prejudice—we shall, I think, accept as a reasonable inference that the part taken by the elementary atoms in the building up of Nature has not been that of bricks or hewn stones acted on by external forces, but much more that of the living cells in a living body; so that the world has not been massed as a heap, but developed by a cosmic spontaneity which belongs to life only.

SILICON.—An element very difficult of preparation. A brown powder, or in iron-grey crystals. Its oxide, **SILICA**, occurs in various minerals forming a large portion of the solid matter of the earth. Quartz, sandstone, sand, flint, agate, opal, rock-crystal, sinter, infusorial earth, spicules of

sponges, and the skeletons of Radiolaria, which last alone constitute thousands of square miles in the deep floor of the Pacific. The slender stems of cereals and other grasses owe to a glassy coating of silica their stiffness, upholding them in the air and sunlight, thus ripening their stalks and seeds to be the staff of life for man and beast. Silica, as glass, has reached high eminence in the history of civilised life, yet its past importance may be as nothing in comparison with its future usefulness should malleable glass become, in sufficient quantities, easily attainable. Not many human eyes have seen the brown powder, or the iron-grey crystals, representing the pure element, silicon, of all this astonishing wealth and variety of material. If it originally came into existence pure—untold eons in the past—probably its term was very brief. Yet on the properties (the Bios) of that particle of silicon rested the contour of our mountains and the limits of our oceans, and much of our life relationship in the world that then was to be.

Veiled for so long, silicon was first seen pure about eighty years ago, by Berzelius.

CARBON.—An element. Occurs as Diamond, Graphite, Charcoal. One of the four constituents of protoplasm, the physical basis of life. Wherefore, the chemistry of living organisms is called the Chemistry of the Carbon Compounds.

Amongst these are—Carbonic Acid, Oxalic Acid, Coal Pitch, Tar, Naphtha, Anthracite, Jet, Ethylene, Cyanogen, Prussic Acid, Petroleum, Marsh Gas.

ALUMINIUM.—Metal. Base of all clays, pipe-clay, porcelain, etc. One of the lightest, most easily worked, strongest, most durable, and uncorrodable, of all metals.

In quantity one thousand times exceeding iron; if it could be produced cheaply, it would become the most

valuable metal in the world. Its oxide occurs as sapphire, ruby, and emery; it occurs also in alum and felspar.

TITANIUM.—One of the rarer metals, known chiefly in a finely divided state. In combination it occurs in blast-furnace slags, in the form of copper-coloured, extremely hard crystals.

CADMIUM.—A tin-white metal, found associated with zinc. Used in various alloys. Its sulphide forms a valuable yellow pigment.

TUNGSTEN.—A white metal, very heavy, hard, and brittle. Obtained from Wolfram. A minute portion in alloy with the steel greatly increases the sustaining power of a magnet.

MOLYBDENUM.—A white, brittle, and very infusible metal.

Its sulphide yields an olive-green streak when used as a pencil.

COPPER.—This metal, with some of its many beautiful ores, compounds, alloys, and crystals, may be seen occupying a tray in the present series.

CONCLUSION.

The miscellaneous character of the communications invited for this evening admits not of any further notice of individual examples, and requires that my concluding remarks should be concise.

The classification of animals and plants in more or less extensive alliances—kingdoms, sub-kingdoms, classes, orders, families, and species, was accomplished long before the cause of their adaptability for such an arrangement was discovered.

We now know that it arose from hereditary development.

It was thought interesting when attention was first called to a like suitability amongst the Protozoa consisting

of a single cell; mere specks of jelly, with skeletons of lime or silica.

I am not aware that it was ever doubted that, *e.g.*, the marvellous suitability for being disposed in orders, families, genera, and species, amongst the microscopic Foraminifera, arose from the same source, the development always waiting upon life.

When, however, we descend immeasurably below the lowest living organisms, to the primordial elementary atoms, wondrous to relate, there is found a similar adaptation for divisions, and sub-divisions, and groups, and general arrangements in a definite order.

If it were possible for us to take a bird's-eye view of the seventy elementary atoms, exhibited in an arrangement shewing their properties, affinities, and relationships; their linear or spiral periodicity; the occurrence of an example of extreme rarity here and there; others of overwhelming redundancy; a little group like that of the halogens in its place; alliances of elements—monad, dyad, triad, tetrad, and so forth; remembering always that the basis of this amazing taxonomy, and the half of it has not been told, lies within the idiosyncrasies (may I not say the Bioi) of those seventy infinitesimal constituents of the cosmos—it may be doubted whether seventy plants or animals could be selected more clearly indicating the results of intelligent design than do the seventy elementary atoms.

MR. G. F. MOORE exhibited and described a disarticulated Skeleton of the Jaguar.

ON THE RECENT ABUNDANCE OF THE MADDER HAWK-MOTH (*Deilephila Galii*).

By JOHN W. ELLIS, L.R.C.P., F.E.S.

The year 1888 will be remembered in the annals of

natural history chiefly for the remarkable incursion of the Pallas's Sand Grouse, and for the unprecedented abundance of the beautiful lepidopterous insect, *Deilephila galii*, and, since the Liverpool district has been unusually favoured by the presence of this latter visitor, a brief account of its occurrence deserves to be recorded in the *Transactions* of this Society.

Deilephila galii (the madder hawk-moth) belongs to that family, the Sphingidæ, which has been considered by common consent the head and type of the Lepidoptera Heterocera, not only on account of the large size, but also because of the remarkable power of flight and the enormous development of the proboscis in the typical genus of the family.

Of the eight European species of the genus *Deilephila*, three occur in Britain, and two of these, *D. euphorbiæ* and *D. livornica*, are so scarce as to be considered only occasional visitants. The remaining species, *D. galii*, is somewhat more frequent, occurring sparingly on the Kentish coast in the neighbourhood of Deal, while occasionally specimens are met with in other parts of Britain.

The moth is of considerable size and beauty, expanding three inches from tip to tip of the wings, and in colour of a dark olive green on the forewing, with an irregular white streak from base to tip, while the hind wings are pale red, with a broad base, and a narrow border of black.

The larva is very conspicuous when full grown, being usually of an olive brown colour, with large pale yellow, dark-bordered, spots on each side, while the last segment is furnished with a strong recurved horn, as in most members of the Sphingidæ—this horn in *D. galii*, together with the whole of the last segment, being bright red. It feeds during August and September chiefly on the yellow bedstraw (*Galium verum*), preferring the scrubby to the luxuriant plants, and especially those growing on a sloping bank,

exposed to the sun and near to the sea. When full fed, it burrows just beneath the surface of the ground, and changes into a pale brown pupa, from which the moth emerges in the following July. The perfect insect is usually found hovering over flowers in the dusk of the evening.

Previous to 1870, the only recorded occurrences of this insect in Lancashire (and there were none recorded for Cheshire) were : near Bury, in 1842 ; Lytham, in 1859 ; and near Bootle. In 1870, several specimens of the moth occurred in Lancashire, at Staleybridge, Bolton, Warrington, and Huyton ; while during the autumn of that year the larvæ were so frequent on the Wallasey sandhills that several collectors were enabled to breed series of eight or ten specimens.

During the succeeding eighteen years very few specimens of the insect occurred in Britain ; but in August last the entomological journals announced the capture of specimens in the latter half of July, and in widely separated localities.

The capture of three or four specimens of the moth at or near Crosby, at about this time, put the Liverpool entomologists on the *qui vive*, and periodical visits were paid to the Crosby and Wallasey sandhills to look for the larvæ, with the result that on August 24th the first larvæ were found ; and from that date until about the middle of September they occurred in profusion, while occasional specimens could be met with until the end of September. Certainly not less than 500 larvæ were found during this time on the Wallasey sandhills alone by the very large number of collectors who came from many parts of Lancashire, Cheshire, and even Yorkshire, for the purpose of adding this insect to their collections. It should be remarked that notwithstanding that the moth must have occurred in abundance at Wallasey to account for so many larvæ, not a single specimen of the

perfect insect has been recorded from this part of Cheshire. A few larvæ were found at Crosby, while others occurred at West Kirby; and, while occasional specimens have been picked up inland, at times feeding on willow herb, its old locality, the Deal sandhills, extending for about twenty miles along the Kentish coast, has produced the larvæ by thousands.

The question naturally arises: "From whence are these specimens derived?" a question not at present capable of a satisfactory solution. There are three theories that may, in some measure, account for this superabundance of a usually rare insect.

(1.) The opinion which chiefly prevails among entomologists is that the imagines which were captured in July were part of a swarm which had migrated (or been blown over) from the Continent, where the insect is usually common. Though there is no doubt of the possibility of such an occurrence, for swarms of butterflies have been met with at a greater distance from land than the few miles which intervene between the British and French coasts, yet the earlier records of its capture are not from localities in those portions of our island nearest to the Continent. The earliest capture recorded is in Co. Howth, on July 16th; then comes Aberdeen, on the 17th; Scarborough, on the 19th; Holloway, near London, on the 20th; Carlisle, on the 21st; Silvertown (Essex) and Stoney Stratford, on the 23rd; while it does not seem to have been met with on the Kentish coast until the 24th, although a number of specimens were taken there between that date and the end of the first week in August. If migration does account for the prevalence of *Deilephila galii* in Britain in 1888, they must have crossed upwards of 200 miles of sea intervening between the Danish or Norwegian coasts and Britain.

(2.) Another theory that has been advanced to account

for the prevalence of this species is that these specimens have emerged from pupæ which have been lying dormant in the locality of their capture for some years. It is a matter of common observation that when insects are kept in confinement there is a tendency in certain species for some of the specimens not to emerge from the pupal condition at the same time as the majority, but to "lie over" until the following year, or possibly for an indefinite number of years, as is certainly the case with *Eriogaster lavestris*, and probably others of the Bombycidæ. If this be the case in confinement, how much more likely is it to happen when in a state of nature the insect is exposed to more variable atmospheric conditions—when it might happen that the whole of a brood, if the imagines emerged at the same time, would be destroyed, and the species exterminated in a particular district. Whether there is any tendency for *Deilephila galii* to so "lie over" in its pupal condition is not known; but the fact of the greatest outbreak of the species during the past season having taken place at those localities where it has more often occurred in previous years, viz., at Wallasey and Deal, would point rather to some power of lying dormant during the pupal condition than to its having reached these localities by migration; besides it is difficult to realise that a sufficient number of individuals of both sexes should reach, say the Wallasey sandhills, to produce the vast numbers of larvæ that have occurred there during the autumn.

(3.) There is yet another possible solution of the problem. We know that were it not for certain natural checks there would be no limit to the increase of any species of animal or plant, and we know, from experience, how a species tends to multiply to an indefinite extent when any of its checks are removed. Witness the result of importing the rabbit into a country like New Zealand, destitute of such

animals as stoats, weasels, and foxes, and where few raptorial birds exist.

Rarity or abundance of any species depends upon the balance of power between its reproductivity and its natural checks, and if the latter are present in a greater degree than the former, rarity, and possible extinction, must be the result. It is, to my mind, quite possible that the conditions of our climate, or the presence of certain enemies (ichneumon flies?) so act as checks upon the increase of *Deilephila galii* in Britain that it barely manages to perpetuate its species. The few specimens which do arrive at maturity may very easily elude the notice of entomologists, as indeed is shewn by the before mentioned statement that, notwithstanding that the moth must have been tolerably common last July at Wallasey, not a single specimen has been recorded from Cheshire. But then comes a time when, in some unexplained manner, the season is either more suitable to the insect or is less favourable to its natural enemies, the species occurs in profusion, and a so-called "incursion" takes place.

Whatever be the explanation of the superabundance of the moth, both in its perfect and larval condition, there can be no doubt that in this species, at least, it has not been produced, as is suspected in the case of some insect pests, by human agency; and the present year will certainly be long known to entomologists as the "*galii* year."

The Rev. H. H. HIGGINS read a communication upon "The Samoyedes East of the White Sea," and exhibited specimens of their clothing, &c.; and also exhibited some Mocha Stones.

SECOND ORDINARY MEETING.

ROYAL INSTITUTION, October 29th, 1888.

MR. JAMES BIRCHALL, President, in the Chair.

Miss Nicholson, Miss Raleigh, Messrs. W. P. Forster and J. R. Paton were duly elected Ordinary Members.

Principal RENDALL, M.A., read a paper on "The Cradle of the Aryans." *

The Rev. T. P. KIRKMAN, M.A., F.R.S., laid before the Society a paper entitled "The Complete Analysis of Four Autopolar 10-Edra." †

THIRD ORDINARY MEETING.

ROYAL INSTITUTION, November 12th, 1888.

MR. JAMES BIRCHALL, President, in the Chair.

Miss Whitmore and Messrs. Amos Burn, J. W. Scholefield, J.P., S. A. Addinsell and W. Bryce Gillespie, were duly elected Ordinary Members.

Mr. F. W. EDWARDS, M.S.A., read a paper on "Commercial Education, including a Review of the Commercial Schools of the Continent." ‡

FOURTH ORDINARY MEETING.

ROYAL INSTITUTION, November 26th, 1888.

MR. JAMES BIRCHALL, President, in the Chair.

Mr. Francis C. Rennie was duly elected an Ordinary Member.

* See page 265. † See page 45. ‡ See page 77.

A NOTE ON THEORETICAL EDUCATION ON THE
CONTINENT: BEING A REFERENCE TO MR.
F. W. EDWARDS' PAPER ON THAT SUBJECT.

By B. L. BENAS.

The discussion which took place at our last meeting on the subject of Commercial Education, which was so ably treated by Mr. Edwards, induces me to bring forward a short note on a system of training in France, in which I venture to think that even our neighbours across the channel admit our practical superiority—I allude to Political Education. After the Franco-German war, when Cæsarism and personal Government were temporarily out of favour with the French people, the leading Republicans thought to do for France what they so much admired in England, namely, that the people should learn to take an intelligent interest in practical politics and should understand the methods of self-government. They established in 1870 an institution called the *Ecole Libre des Etudes Politiques*, the object and programme of which I give you in a paragraph at foot.* Now after read-

* *ECOLE LIBRE DES SCIENCES POLITIQUES, BUT DE L'ECOLE.*—Dans son ensemble, l'Enseignement de l'Ecole des Sciences politiques est *le couronnement naturel de toute éducation libérale*. Son programme embrasse des connaissances auxquelles aucun homme cultivé ne doit rester étranger.

A un point de vue plus spécial, l'Ecole des Sciences politiques se propose le même but que l'ancienne *Ecole d'administration*. Chacune des grandes divisions de son enseignement constitue une préparation complète à l'une des carrières suivantes et aux examens ou aux concours qui en ouvrent l'entrée :

1. Diplomatie. (Ministère des Affaires étrangères. Légations. Consuls.) (1).
2. Conseil d'Etat. (Auditorat de 2^e classe.)
3. Administration. (Administration centrale et départementale. Contentieux des ministères. Sous-préfectures. Secrétariats généraux de département. Conseils de préfecture.)
4. Inspection des Finances.
5. Cour des Comptes.
6. Service Colonial. (Administration centrale (2).—Directions de

ing the curriculum of this college one would imagine that the training of prospective public men in France is far more perfect than our own, and so it is in some respects. For in fact what is the composition of our present House of Commons? The smallest minority consists of young men whose parents are possessed of ample means and who have been able to give their sons a University training and a life of physical and mental exercise with the direct object of serving the state. A majority, however, of the practical politicians of Great Britain, who have successfully served in several of the leading departments of state, have graduated perhaps from the parish vestry; in some cases have derived their tuition in public life from a municipal council, and very many others have acquired their knowledge of organisation from congregational meetings of dissenting bodies. This is especially the case in the United States. The admirable constitution of the great Republic of the West was framed to a great extent by men who were accustomed to lay down the rules and regulations of Puritan conventicles, and there are few such statesman-like documents left to posterity even by the most experienced and trained jurists or diplomatists. Both the English and Americans receive their political knowledge from the experience of life itself. The French on the other hand, seek to meet the exigencies of a throbbing and active civilisation by a fixed code of theoretical education. When a French governor of a colony finds himself face to face with a situation not calculated upon in his official training, he becomes to a certain extent helpless; whilst Englishmen and Americans use their ordinary

l'intérieur; administration des affaires indigènes; emplois dans les grandes compagnies industrielles et financières.)

D'autre part, le programme comprend des éléments d'instruction supérieure qui complètent utilement la préparation à certaines hautes positions commerciales. (Banques. Contentieux des grandes Compagnies. Inspection des chemins de fer, etc.)

business aptitudes, coupled with a common sense view of the situation, and thus in most cases they govern naturally and not artificially. There is much the same method adopted in English-speaking countries in their commercial education. Neither the British nor Americans are trained to Commerce theoretically, they go into the practical school of life, and it becomes a question of the survival of the fittest. No one could for a moment advocate an entire absence of training for commercial life, and leave it merely to the haphazard education of buying and selling; but I maintain there is such a thing as overtraining for commercial pursuits, and I fear both Germany and France will find that a lassitude will follow the ultra theoretical training which they now deem so indispensable for the moment. In the matter of technical education we have been, it must be admitted, somewhat behind the nations of the Continent, especially in the want of encouragement given to capable artizans, and in the scientific development of the appliances of manufactures, more especially in chemistry, in which department the Germans have had better opportunities. This, however, is being rapidly changed with us for the better. It remains yet to be proved whether practical commercial office training, following a sound all-round school teaching, is not in the long run better adapted for the idiosyncracies of English speaking people than a highly tempered course of theoretical commercial school studies, such as the French and Germans pursue. As successful business men among English-speaking people, the Scotch are decidedly in the very front rank, and as financiers they yield to no other community. The Scottish banking system is abreast of the financial requirements of every phase of advanced commercial civilisation, and they need fear no competition from either French or German bankers. In the British colonies, in India, and in South America, they are directors or managers of the

principal banking and financial institutions. Might we not rather look to the practical Scottish commercial training for emulation, rather than to the theoretical French or German methods?

Dr. J. BIRKBECK NEVINS read a paper on "The Changes of Dynasty, and of National, Political, and Religious Sentiment in France, as illustrated by the French Coinage from 500 B.C. to the Present Time." *

FIFTH ORDINARY MEETING.

ROYAL INSTITUTION, December 12th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. E. H. Cookson (Mayor of Liverpool) was duly elected an Ordinary Member.

Mr. GUTHRIE called attention to the Aquaphone, a recent discovery for transmitting sound through water.

Mr. JOHN NEWTON, M.R.C.S., read a paper "On the Origin of the Religious Idea." †

SIXTH ORDINARY MEETING.

ROYAL INSTITUTION, January 7th, 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. F. J. Leslie, F.R.G.S., and the Rev. Lawrence P. Jacks, M.A., were duly elected Ordinary Members.

Rev. H. H. HIGGINS and Mr. F. ARCHER, B.A., exhibited and described a specimen of Wood Opal from the Nile Valley.

* See page 303.

† See page 185.

Miss FANNY L. CALDER read a paper on "Domestic Education in Elementary Schools." *

SEVENTH ORDINARY MEETING.

ROYAL INSTITUTION, January 21st, 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. JOHN NEWTON, M.R.C.S., read a paper "On the Religions of India ; Ancient and Modern."

EIGHTH ORDINARY MEETING.

ROYAL INSTITUTION, February 4th, 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Dr. SHEARER communicated the following note:—"An Original Illustration of Goëthe's Law of Morphology in Plants."

ABNORMAL OR "ATAVIC" ROSE.

THE accompanying monstrosity, or abnormality, in the fruit of the *Rosa Spinossima* is one more beautiful, and to me, so far as the *Rosaceæ* are concerned, perfectly new illustration of the profound law in morphology, hinted at by Linnæus and established by Goëthe, viz., that the flower and fruit are composed of several successive whorls or series of modified leaves, folior appendages or phyllomes more or less altered and blended together to form compound organs, the fruit or *Cynarrhadum*, in the case of the rose, being formed from the union of the calycine leaves, or their petioles, with the dilated end of the receptacle, and enclosing several achenes. Typical formula S5 P5 A00 G1-00.

* See page 109.

In the Rosaceæ, the carpels are either enclosed within a hollow receptacle formed by the union of the lower parts of the calycine leaves with the dilated end of the receptacle forming the receptacular tube, or "hip," or Cynarrhadum, as in the roses proper, or they are free, not enclosed at all, but surrounded by the whorl of separate calycine leaves or sepals, as is the case in the raspberry, the blackberry, and the geum.

This latter, or free condition of the sepals, normal in the latter but abnormal in the rose, is the condition we met with in the specimen exhibited from the New Brighton sandhills last September, and here represented



There is



no trace of the cup or receptacular tube, the carpels are naked, seven or eight in number, and the calycine leaves, five in number, are foliaceous, much developed, and putting on a close resemblance to the odd leaflet of the ordinary pinnate foliage leaves. The circlet of leaves replacing the urn have long stalks and single rounded laminae, and that they are clearly the representatives of the missing urn is

inferred not merely from their situation, springing from the top of the receptacle, but because in normal specimens the peduncle, whether long or short, is wholly destitute of leaves. Here, then, is no "freak of nature," no abnormality, except in the limited racial or tribal sense; but an illustration of retrograde metamorphosis or conformity to the all-embracing higher law of morphology, which regards all the organs as but modified leaves.

Here, as in a prism which splits up into its constituent colours the beam of light, is held out to human ken the solution of the enigma, or one of the enigmata, of vegetable existence. Here plant-structure is resolved into its elements and simple factors, that we might understand something of the mystery of the plan of creation, and perchance enter into some conception of the ideas of the Eternal who, to use the words of Bacon, "in his indulgent kindness towards mankind, had chosen for His playfellow the human soul."

Are we to suppose, on evolutionary principles, that the ancestral condition of the fruit in the Rosaceæ was comparable with that of the Rubas or Geum, and that the carpels in the primitive type were naked on the receptacle and unenclosed? In that case we have a reversion in the specimen before us to the primitive type, in other words, an "Atavic" rose.

"It is desirable," says Moquin-Tandon, "not to forget those extremely rare cases in which nature works, not in violation of her laws, but in deviation, so to speak, of her most common habits. These remarkable structures are indeed revelations."

The specimen was submitted for examination to the Rev. H. H. Higgins, M.A., Ex-President of the Society, who failed to discover any trace of insect action; and to Dr. Masters, of London, the well-known author of a work on Vegetable Teratology, who wrote to the following effect:—

I am quite of your opinion as to the nature of the case, and its evolutionary significance. I do not remember to have seen a similar case in the rose, though I have done so in the hawthorn. I should be disposed to attribute the appearance to a defect or arrest of development—"retrograde metamorphosis," if you prefer the term. The latter expression, however, seems to imply formative action even of a retrograde character, while, if I am right, the appearances are due to the lack of formative action.

Subsequently he wrote :

I suppose, on evolutionary principles, the presence of a succulent hip became gradually of advantage to the plant in facilitating the dispersion of the seeds by birds, and so the over-growth of the flower-tube became accentuated as we now see it. This *probably may have been the case*, I do not think we are justified in saying that it was.

Yet more striking, I might even say touching, are the illustrations we meet with of the *ascending metamorphosis* in plants. The bird cherry, the flowering currant, and the horse-chesnut afford examples, readily accessible in the spring of the year. Then, if you look carefully, you will be sure to encounter specimens of the bract's covering in the winter buds passing out of the simple boat-shaped form of the ordinary protective bract into the higher type of the foliage leaf of the respective tree.

Again, the spiritual suggestiveness of these abortive efforts after higher types need but be hinted at. In the words of Coleridge :—

"All things strive to ascend, and ascend in their striving."

Where sepals become petaloid, petals antheriferous, and stamens bear ovules, or become transformed into carpels, you have examples of the higher or ascending metamorphosis. A striking example of this is given by the late Professor Goeppert of Breslau, who presented to the Congress of Naturalists, at Vienna, in 1832, a monstrous specimen of a

poppy capsule, the stamens surrounding which had been transformed into dwarf capsules. In 1839, he discovered a whole field of pepavers metamorphosed in the manner indicated. The central capsule was surrounded by from one to sixty small supplementary capsules, with ripe seeds in the latter as well as in the primary capsule. The monstrosity in question was proved to be capable of being perpetuated during at least two generations.

I have now in my garden a plant of the common German wallflower (*Cheiranthus cheiri*), maturing imperfect capsules, each composed of three imperfect siliquæ fused together, which I procured from St. James's market in the spring, and which as it flowered was found to be entirely destitute of both stamens and petals. The plant had a singular appearance in the absence of these essential organs, the vegetative force saved from which went apparently to the formation of these remarkable tripartite but imperfect siliquæ.

The subject of this paper furnishes an illustration of how the common law of formation in the case of the fruit of the rose has been superseded, for the nonce, by a higher law which appertains to and regulates development throughout the entire vegetable kingdom.

If one general law may thus be crossed and contravened by another and yet higher law, why should we doubt the possibility of occasional exceptions to the general order of Providence, seeing the world is not an automaton, or piece of blind mechanism and dead uniformity, but the theatre of the operations of an Eternal mind? For what are miracles after all? A miracle is the *unusual*, while natural law is the habitual, method of the Divine action. To me, indeed, it seems that the now widely accepted doctrine of Evolution of new species implies interferences with the existing order of things which, however we may blind ourselves to their real nature by attributing them to laws of variation and environ-

ment, are for ever impossible in the absence of Spirit, and hardly differ from the miraculous except in the gradual manner of their operation.

Mr. ROBERT F. GREEN read a paper on "The Arabian Nights." *

NINTH ORDINARY MEETING.

ROYAL INSTITUTION, February 18th, 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Dr. J. MURRAY MOORE, late of Auckland, New Zealand, who has returned to practice in Liverpool (introduced by Dr. SHEARER), exhibited the following bones of the extinct, wingless, gigantic bird, the "*Moa*," found in the Abbey Caves, near W. Nangarei, North Island :—

2 Right Femora.

1 Left Femur.

2 Right Tibiæ.

1 Left tarso-metatarsal bone.

1 Right ditto.

Dr. MOORE said it was a well ascertained fact that a race of Strathiens birds, of very large size, the skeletons of some showing that they stood fourteen feet high, had existed in New Zealand down to (possibly) the earliest historic period. There are more than thirty entire skeletons to be found in the museums of Australasia and Europe. Seven distinct species of the *Dinornis* have been described by Professor Owen, who first named the bird, and others. The remains of the *Moa* have been found in and beneath alluvial drift, deeply embedded in swamps and gravels, or in limestone caves, as in the instance of these seven bones. As the Maories of New Zealand have traditions of the existence of

* See page 247.

the *Moa*, the name also being a genuine Maori name, it is highly probable that the earliest Maori immigrants—say, about 1100 A.D.—saw the birds; and, food being very scarce, hunted them down and exterminated them. The word *Moa* in Maori also means a ploughed field, from which scholars have argued that these birds scratched up with their powerful claws the flat ground in searching for roots, seeds, and grubs, and thus gave the natives the first idea of how to cultivate the ground by harrowing, etc. The larger number of *Moa* remains have been found in the Middle Island.

The *Sphæria Robertsii* is the caterpillar of a moth called *Hepialus Virescens*, from the head of which a long fungus grows. It is found chiefly near the roots of the Rata tree (*Metrosideros robusta*). While burying itself in the earth for the purpose of changing into the chrysalis state, this caterpillar gets the spores of the fungus into its mouth, or between the head and its first ring. The spores then vegetate and feed on the body of the caterpillar, soon killing the insect; and, finally, filling up all its interior with a moist whitish-yellow substance, like fern-root, but leaving the outer skin perfect in form. The length of the caterpillar is from one to four inches, and of the fungus-stalk growing out of its head from three to ten inches. Sometimes it throws out two seed-stalks. Having completed its spores it dies. When freshly gathered the Maories eat it. When charred in the fire the natives use them to colour the wounds in the process of tattooing. The native name is *Pepeaweto*. The growth is analogous to that found occasionally on a species of Longicorn beetle. A species of *Sphæria* is found in New Guinea, and one in China.

PHOTOGRAPH OF A YOUNG GORILLA.

MR. T. J. MOORE exhibited to the meeting a photograph,

lent to him for the purpose by Mr. R. W. Roulston, of a young female Gorilla, which had recently been living for some time in the possession of Mr. J. J. Jones at Ngove, a trading station on the West Coast of Africa, about one degree south of the equator.

Mr. Jones had trained the creature to follow him like a dog, and she had recently accompanied him on a journey to Sette Camma, a distance of some twenty miles, walking all the way. Jennie, as this baby gorilla has been called, sleeps in her master's room and follows him wherever he goes, weeping like a child if left behind. She has acquired many civilized tastes and habits, not all to be commended, and will drink tea, ale, brandy, etc., out of a cup or glass, displaying the utmost carefulness not to break the vessel, and will, in fact, do almost anything her master tells her, and is so intelligent and affectionate as to greatly astonish and interest all who have seen her. She will, Mr. Jones states, do almost everything but talk, and her eating is as varied and injudicious as her drinking, including salt beef, pickles, jam, bread, fowl, fish, etc.*

Mr. FRANCIS C. RENNIE read a paper on "Tom Hood."

TENTH ORDINARY MEETING.

ROYAL INSTITUTION, March 4th, 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. WALTHER exhibited and communicated a note upon some Japanese books.

* A facsimile of this photograph will be found in the *Liverpool Journal Research* for March 1, 1889, p. 143. It will not be considered surprising that with such a dietary the poor creature died suddenly, though not without strong suspicion of foul play.

Rev. S. FLETCHER-WILLIAMS read a paper on "English : Literary and Vernacular."*

ELEVENTH ORDINARY MEETING.

ROYAL INSTITUTION, March 18th, 1889.

REV. H. H. HIGGINS, EX-PRESIDENT, in the Chair.

Mr. ISAAC ROBERTS, F.G.S., F.R.A.S., read a paper on "Glimpses of the Unseen Universe by the aid of Photography," illustrated with Lantern Transparencies from the original negatives.†

TWELFTH ORDINARY MEETING.

ROYAL INSTITUTION, April 1st, 1889.

This meeting took the form of a Joint Meeting of this Society and the Liverpool Polytechnic Society.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Professor HELE SHAW read a paper on "The Development of the Heat Engine."

THIRTEENTH ORDINARY MEETING.

ROYAL INSTITUTION, April 15th, 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Miss E. E. Field, and Messrs. A. G. White and Wm. B. Rippon, were duly elected Ordinary Members.

* See page 211.

† See page 293.

Mr. JOSIAH MARPLES called attention to a Japanese Newspaper, and communicated some notes upon Japanese Education.

Rev. H. H. HIGGINS read a paper on "The Faith of an Evolutionist." *

FOURTEENTH ORDINARY MEETING.

ROYAL INSTITUTION, April 29th 1889.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. Morris P. Jones was duly elected an Ordinary Member.

Rev. H. H. HIGGINS was unanimously elected President for the next two Sessions.

Mr. T. J. MOORE read the following Notes :—

OVIS POLII.

Marco Polo in his celebrated *Book of Travels through Central Asia in the Fifteenth Century*, was the first to make known the existence of large races of Wild Sheep in the elevated plains of Pamir, eastward of Bokhara, 16,000 feet above the sea level.

These are now known to consist of several closely allied species, the first of which was named in 1840 by Blyth, in honour of the celebrated traveller, from the only skull and horns then known in Europe.

In very recent years other species have been named and described by explorers, but all are surpassed in size by the *Ovis Polii*.

At an early meeting of this session of the Society, I had the pleasure of exhibiting some examples of the Tur or Wild Sheep of the Caucasus, specially procured for the Museum by Mr. St. George Littledale, our most energetic benefactor.

* See page 121.

In the *Field* of September 8, 1888, appeared the following brief note from a correspondent signing himself simply under the letter A. :—

OVIS POLI SHOOTING IN THE PAMIR.—I have received a letter from Mr. St. George Littledale, dated Lake Kara Kol, the Pamir, Aug. 2nd, who, with his wife, has succeeded in penetrating to those districts, and shooting several fine specimens of the *Ovis Poli* at an elevation of some 13,000 feet. The only Museum known to have a complete specimen is that at St. Petersburg.—A.

In December a fine skull of an adult male was purchased for the Museum from Messrs. Rowland Ward & Co., London, measuring $41\frac{1}{2}$ inches from tip to tip of horns.

On the 12th March last I received the following brief letter from Mr. St. George Littledale, dated Wick Hill House, Bracknell (Berkshire) :—

DEAR MR. MOORE,

I hope in the course of a day or two to send you a skin and skull of the *Ovis Polii*, which I got last autumn on the Pamir.

We are off again in a couple of weeks to Chinese Mongolia in quest of the true *Ovis Ammon*, not the Ladak sheep of that name.

Yours sincerely,

ST. G. LITTEDALE.

In a few days the promised specimens were safely received, and are now exhibited before going into the hands of the taxidermist.

I wrote at once to Mr. Littledale asking for any notes he could find time to favour me with for this evening's meeting, but none having come to hand the specimens must speak for themselves.

Suffice it to say remains of *Ovis Polii* have been almost unknown in European or other museums; that the time, energy, and expense involved in their capture daunt the most enthusiastic sportsmen, and although Mr. Littledale is a

man of deeds rather than of words, the Society would, I think, honour itself by honouring him with the title of Corresponding Member.

SKULLS OF OVIS POLII.

				Mr. Littledale's.	Purchased.
Tip to tip...	43½	41½
Greatest curve, right horn			...	54¾	56
„ left horn			...	55¼	58¾
Circumference at base, right horn.				15½	15½
„ „ left horn...				15½	15½

At the suggestion of Mr. Moore Sir J. A. Picton proposed, and the Rev. H. H. Higgins seconded, that Mr. and Mrs. St. George Littledale should be proposed as Corresponding Members at the earliest meeting allowed by the bye-laws in the next session, and that to Mrs. St. George Littledale be accorded the honour of being recommended as the first Lady Corresponding Member of the Society.

LIVING LEPIDOSTEI IN THE MUSEUM AQUARIUM.

The Museum Aquarium was enriched last Friday by the receipt of two living specimens of *Lepidostus* or Bony Gas Pike, sent in the care of Mr. Bartholomew, chief steward of the Britannic, by Mr. Eugene Blackford, U.S. Fish Commissioner, New York, in exchange for live soles.

The fish are young, measuring about 14 inches in length, and are highly valued as being the first of their kind brought to the museum, and probably to Europe, if not forestalled by specimens from the same source shipped by the German Lloyd's steamer for the Brighton Aquarium.

The *Lepidostei* are armour-plated fishes, found only in the river system of North America, numbering some half dozen species, and represent the ganoid fishes of the early

geological formations. They feed on other fish, and their general resemblance to a pike has given to them the vernacular names of Gas Pike and Bony Pike.

SEAL AND PENGUIN.

We are indebted to our Associate Member Capt. Griffith Jones, barque "Hermine," for the skins of the Penguin and the Seal, here exhibited stuffed, as well as some interesting fish, and for other specimens collected by him on a voyage to British Columbia, which I hope to note in a future communication.

The Seal is from Esquimalt Harbour, where it was the pet of the visitors to that beautiful bay. It often came up close to the boat, and was seen to eat fish thrown to it by the people, but at last it met its death at the hands of a cruel sportsman.

The Penguin is from the Iglesia Piedra or Church Rock, near the village of Cobquieura, Chili, Capt. Griffith Jones states that as he entered one of the wonderful and interesting caverns in the above rock in the dim light, "I saw an object walking upright and coming straight up to me. I made out it was a penguin, and when it came close to me it stopped and looked up into my eyes as if it wanted to ask *my* business there. It did not try to escape my grasp. I put it into my bosom and took it on board. It lived for eight days and seemed to be perfectly destitute of fear."

Being adapted in the highest degree to a life in the water, the penguins represent among birds the seals among the mammals, and curious indeed are the many features in which the two groups show parallel developments, both in structure and habits, and particularly striking is the analogy with the eared seals, which chiefly inhabit the southern hemisphere, to which the penguins are entirely limited.

Like the fur seal and its allies, the penguins pass the

far greater part of their lives on the ocean, heedless of storms and waves; down into the far deep they go in pursuit of their food, and down they go into the quiet regions never stirred up by any hurricane, if the surface is getting *too* turbulent, though it must be hard weather indeed when a penguin goes in search of shelter, for he enjoys the wildest surf and loves the roaring gale.

The swimming is quite peculiar, and differs widely from the same movement as performed by all other swimming and diving birds, for the paddle-shaped wings are brought into motion alternately, thus acting like a screw, but while in other birds the legs also come into play at least as accessory propulsive organs when the bird is diving, these organs in the penguins only act as a rudder, except when swimming on the surface of the water.

The general outline of seals and penguins is much alike, especially in the length and thickness of the neck; the form of the extremities and their mode of progression have a general resemblance; both have thick layers of subcutaneous fat, and the feathers of the penguins are as short and close fitting as is the fur of the seals.—*Stejneger*.

Rev. H. H. HIGGINS exhibited a Case of Shells, presented to the Museum by Mrs. Parkinson; and a Polynesian Breastplate.

Mr. ENTWISTLE, Assistant Curator, Mayer Museum, read the following description of some articles of interest exhibited in the room.

ETHNOGRAPHICAL OBJECTS FROM PATAGONIA.

There are now on exhibition in the Museum, William Brown-street, a miscellaneous selection of Ethnographical objects from Patagonia, collected and exhibited by Mr. Asahel P. Bell, C.E., Liverpool, an engineer who is engaged in constructing the Central Railway of Chubut, Eastern

Patagonia. The Collection has been formed by him during the past few years, and consists of the following specimens : Saddle-cloths, fillets, waist-bands, garters, and a Broncho, all woven in wool, with beautiful coloured designs and patterns ; an almost complete horse equipment—Saddle, bridle, stirrup, whip, lasso, and bolas ; also stone pestles and arrow-heads from ancient Indian burial-places. In addition to the above, there is a fine group of silver personal ornaments, made by the present Indians from Spanish dollars. This group contains—Cloak-pins, girdle-bands, collars, necklaces, breast-ornaments, ear-rings, finger-rings, bombillo, and silver-mounted maté teapot.

ANCIENT EGYPTIAN SCULPTURES.

On March 15th, 1889, there were unshipped at the Huskisson Dock, Liverpool, a number of ancient Egyptian sculptures, of large size, discovered by M. Naville (explorer to the Egypt Exploration Fund), at Tell Basta, in 1887-8. The temple of Bubastis, at Tell Basta, Lower Egypt, was visited by Herodotus. He describes it as the most beautiful temple in Egypt. This temple was supposed to have been utterly destroyed. Marriette Bey and others did not believe that any portion existed. In 1887, M. Naville sunk large trenches, and discovered some massive blocks of red granite. The following season he returned, and laid bare the whole of the temple, the length of which measured 1,000 feet.

The Committee of the Egypt Exploration Fund have generously given to our Museum a large block of red granite, sculptured on the one side with a colossal portrait head of Rameses II (XIX Egyptian dynasty, about B.C. 1324-1219), and on the other side with part of a processional subject representing priests carrying a sacred bark, or *bari*, containing the shrine of a deity. The portrait sculpture of Rameses II belonged originally to that part of the Temple of

Bast which was restored by that king. When the building was re-edified, from four to five hundred years later by the Bubastite Kings (XXII dynasty, B.C. 993-847), Osorkon II caused this sculpture, with many others, to be cut into building blocks in order to erect a new hall, the faces of the sculptures being built into the walls, and the backs re-sculptured. This new hall, constructed entirely of red granite, was covered with an immense series of bas-relief processions of priests and deities, and represented a religious festival instituted by Osorkon II in honour of the God Amen.

Mr. McLINTOCK read a paper on "The New English Dictionary and some of its Predecessors." *

Mr. R. J. LLOYD, M.A., read a paper on "First Steps in Dictionary Making, illustrated mainly by the word "High" and its compounds." †

* See page 151.

† See page 167.

PAPERS READ.

THE CHURCH AND THE STATE IN MEDIEVAL EUROPE—THE CHURCH AND THE EMPIRE.

By JAMES BIRCHALL,

PRESIDENT.

IN the former Address which I had the honour of delivering from this chair, some features in the development of our institutions and political ideas were presented to show that a knowledge of history, more particularly that of the Middle Ages, is essential to an intelligent comprehension of contemporary politics. My address, this evening, has the same end in view; but, instead of furnishing another series of illustrations, I shall confine myself to one question only—a question which has within recent years assumed a large figure in public discussion, and before long will press for an answer. Church and State—what should be their respective positions and mutual relations? No problem within the range of history and politics is easier to state, or more difficult to solve, and as a student of history which presents men, societies and systems as they are and not as they should be, I shall not attempt the task.

When Church and State were first allied as independent organisations, the evils and dangers inherent in the union were not perceived by its promoters. The world was without any experience of such a scheme, and no one entertained the remotest idea of the antagonism that would inevitably follow the alliance of two powers claiming control within the same limits, one of which, from its very nature, was bound to assert supreme dominion over the other.

Sceptre and crozier clashing, and the mitre
Grappling the crown.

Subsequent history has familiarised the idea to modern thought, and it is to some of the more remarkable phases of the conflict which resulted during the Middle Ages that I invite your attention in this Address. The subject is vast, and its largeness has grown upon me since I began the study of it. What was originally contemplated for one paper must, therefore, for justice' sake, extend itself to others. At present, our attention shall be confined to the relations which existed between the Church and the Empire in medieval Europe, and, with your permission, and that of time and health, the growth of national churches in France and England, and the conflict between the civil and ecclesiastical jurisdictions in both countries shall be brought before the Society's consideration in due course.*

Among the nations of Oriental antiquity, religious systems were purely local. Their deities were gods of the hills and gods of the valleys, of the land and of the sea—and, even among the highest and most cultured people, the supreme object of their adoration was, in popular conception, a national deity only, whose favour or displeasure brought success or misfortune—whose revelations were received as commands for the direction of all public undertakings. Religious feelings were keen among these nations, and fidelity to their deity was a form of patriotism. Under the Hebrews, for example, devotion to Jehovah was the measure

* The text of this Essay has been so closely interwoven with the materials of an extensive and elaborate series of notes from the authorities consulted, that it would be tedious to cite the references on every occasion. It will be sufficient, therefore, to state that Gibbon's *History* and Milman's *Latin Christianity* have been used for the main course of the story, and that glosses and interpretations have been drawn from Dr. Stubbs' *Lectures* and his *Constitutional History*, from Freeman's *Lectures and Essays*, Lilly's *Chapters in European History*, Guizot's *Lectures on Civilisation*, Kitchin's *History of France*, Lecky's *Morals and Rationalism*, Hallam's *Middle Ages*, and, more than all, from Bryce's *Holy Roman Empire*. To these, and other sources of information, I desire to express my obligations.

of their national prosperity. All the traditions of their religion were identified with splendid national triumphs—all the vicissitudes of their national career fixed in their minds the perfect oneness of their Church and State. Their human king ruled solely by the favour and gift of their Divine King, and, on solemn festivals, he performed the duties of both the priestly and the kingly office. It was this ancient system of theocracy which suggested to the early advocates of toleration the doctrine that it is the duty of every nation, in its national capacity, to adopt some one form of religious belief, and to act upon its precepts with the consistency expected from an individual. This theory, still accepted in many countries, has been most successfully assailed in England and France, where the intellectual and political tendencies of the age have had the greatest influence. In England, the disestablishment movement is in progress—in France, there has been no recognition of a State religion since 1830.

Passing from the Oriental systems to the simple organisations of Greece and early Rome, we find the same worship of local deities—religion is a mere function of the State, and civic patriotism is blended with religious feeling, as with the Jew. But there was this difference. While the patriotism of the Jew was wholly concerned for the national worship, as the great end of all effort and self-sacrifice—the highest object of devotion to the Greek and the Roman was the welfare of the State; religion was left to the care of the civil magistrate, as pertaining to his office and duty.

When the Roman republic fell beneath the Cæsars, and all power and political action were centred in the Emperor, the like responsibility devolved upon him, and religious worship also fell under his control. He was Pontifex Maximus—the supreme head of all cults, and the final

arbiter of the moral law. Jove might reign in heaven, but Cæsar was the deity on earth below.

The conversion of the Emperor to Christianity was not considered to affect these high claims to moral and ecclesiastical rule. Neither Constantine nor any of his immediate successors abdicated the office which gave them the supreme direction of religious worship, and, although Gratian refused to wear the pontifical robe of the head of the priestly college, he retained the title to signify that his attachment to the Christian faith had not divested him of any imperial prerogative, and that he was as capable of giving laws to the Church as the pagan emperors had been to direct the sacrifices of the Olympian Jove.

But the Church was an institution vastly different to the heathen cults and philosophies which she had overthrown. She attributed her doctrines and principles directly to divine revelation. She claimed to be a kingdom whose fealty in all spiritual concerns was entirely due to another king than Cæsar. She had her own peculiar and special jurisprudence by which she ruled, condemned or absolved her subjects in complete independence of the secular authority. The services of her altars were entrusted to a perpetual succession of consecrated ministers, who, unlike the priests and flamens of the heathen cults, formed a distinct caste apart from the laity; and she accounted the meanest of her deacons as more honourable in spiritual rank than the Emperor himself.

On the other hand the existence of such a perfectly constituted society, governed by its own hierarchy, and having its own peculiar rules and traditions, was inimical to the theory of the Empire, that no organisation, distinct from itself, could exist within its limits. It was this hostility between the two, more than any conflict as to faith or doctrine, which had brought upon the Christians their bitterest

persecutions. Spiritual and temporal interests had never before divided mankind into adverse camps, and the genius of Christianity was adverse to their union. It was doubtless felt that the alliance of the Church with the Empire would contribute to its secularisation, alienate it from its primitive simplicity, and prevent it from ever rising to such a grand ideal as was set forth, for example, in Augustine's "*City of God*."

But the Church had already gone far from original righteousness. Pagan sentiments, traditions and practices, had been Christianised in order to win over the ignorant, and the philosophical interpretations of Neo-Platonism had been accepted to gain the intellectual. She was consequently torn asunder by fierce doctrinal controversies which her ecclesiastical discipline had not the power to suppress. Her political establishment removed the difficulty. The zealots of orthodoxy adjudged all means lawful for the suppression of heresy, and even the prerogatives of the pagan office of Pontifex Maximus were not condemned, if by them the true faith could be maintained. The determination of doctrine was thus forced upon the civil ruler. Heretical strife could only be appeased by general councils. The Emperor alone could summon these, and he alone could enforce their decisions by pains and penalties of his own. The Church thus fell into the irreconcilable contradiction of inflicting temporal punishments for spiritual offences, through the secular authority, and Roman citizens again beheld the spectacle of their chief magistrate exercising a dominant influence in religious affairs. Both Theodosius and Gratian in their edicts defined doctrines or ratified their definition, and declared and condemned heretics. Justinian went beyond all his predecessors. He ruled the Church like a Caliph, and his code regulated every detail of ecclesiastical life, worship, and discipline.

This absolute supremacy of the sovereign law passed into the barbarian codes, modified, however, by the limitations of the royal power, and by the superstitious reverence in which the clergy were held by the newly converted tribes. Where the monarchy was strong, the temporal authority was scarcely less full and complete than it was under the Christian Emperors. Charles the Great, for example, in his imperial edicts, was at once the legislator of both Church and State. Another modification arose from the higher moral tone, the freer spirit, and the greater sense of justice, which made the Teutonic races so superior to the effete and corrupted Romans. In the Gothic kingdom of Italy, the earliest and not the least noble of the monarchies parcelled out of the Roman dominion, we find a marked contrast between the despotic and intolerant government of the Emperors, and the serene impartiality of the rule of Theodoric. Although he and his people had accepted the Arian form of Christianity he attempted nothing against the Catholic faith. The clergy of both Churches were treated with equal consideration, and the Pope with grave respect. They were employed indiscriminately in the business of the State, yet Theodoric maintained firmly and calmly his supremacy over all of them ; summoning them before his courts for all ordinary offences, and leaving them to their own tribunals for ecclesiastical misconduct. The overthrow of this kingdom, which thus set the earliest example of Christian toleration, was one of the greatest evils which happened to Italy, and from it may be traced all the misfortunes which fell upon that unhappy country throughout the whole course of its subsequent history.

The subjection of the Church, under the Roman Empire, was further seen in the disposal of ecclesiastical appointments. The right of election to bishoprics was originally vested in the clergy and laity of each episcopal city. According to the civil law, the Emperor was the perpetual and

indefeasible representative of the people. For this reason he began very early to claim the right as exclusively his own, exercising it in the first instance, when a vacancy occurred in the patriarchal sees. This interference was not recognized by the Church as legal. But ecclesiastical dignitaries were also civil magistrates, commissioned by the imperial government to discharge many important duties of a distinctly secular character. A bishop's office, especially in the large and opulent cities, was consequently sought rather for its worldly advantages than for any concern for spiritual interests, and secret corruption, as well as open violence, too often influenced the elections. It was therefore only reasonable that the supreme civil authority should have control over these appointments, and not only regulate the elections, but subdivide or re-arrange dioceses, and remove or translate bishops, as the combined interests of the Church and the Empire required. Such imperial encroachments upon the original liberties of the Church were, under the circumstances, practical safeguards against worse evils. The spiritual authority by its doctrinal contentions had lost public confidence—thoughtful men among the laity observed that it had no fixed rule of faith and practice, and the enlargement of a jurisdiction, whose action was certain and whose decisions were enforced, was received with general assent.

In the meantime, an ecclesiastical sovereignty was quietly and steadily growing up, destined to cope with all these assumptions, and eventually deprive the civil ruler of his domain in the moral and spiritual affairs of the world. We are not now concerned, except indirectly, with the growth of the Papacy. Let it suffice, then, to say that the spiritual supremacy of the Roman Pontiff was the natural result of the conversion of the Emperor, and the acknowledgment of Christianity as the established religion of the State. It

was inevitable that the head of the emperor's religion, in his own imperial city, should become at once a great accredited functionary, and rise superior to his fellow-dignitaries in influence and authority. When schisms and religious factions had assumed the grave importance of State affairs, and could only be pacified by an appeal to the emperor, it followed that such an appeal would be referred to the metropolitan bishop for counsel and consideration, before action was taken; that the prelate of Rome should be regarded as the protector of the orthodox faith, and ultimately recognised as the spiritual head of all the churches. The removal of the seat of government from the Tiber to the Bosphorus confirmed this position. The Bishop of Rome then became the greatest personage in the city; and in the prostration of imperial rule after Alaric's invasion, it was manifest that he was the only durable authority left, superior to the senate. In this capacity, he acted as the unrecognised delegate of the Emperor, hardly inferior in rank to the exarch at Ravenna, though much more influential; and he maintained the bond between Rome and Constantinople until the iconoclastic controversy finally severed the Eastern and Western Churches.

While this quarrel was pending, the fierce Lombards, who had long coveted possession of the imperial city, made great advances towards their object. The peril was imminent, and demanded prompt measures; and the Pope, throwing aside all further concern for the Byzantine princes, who had given him no help against the invaders, summoned the Franks to his aid. The alliance then formed gave the Pope a province, and established him as a territorial sovereign. But it presently confronted him with a new Emperor, who maintained his temporal authority over the Church with a firmness not less than that of Theodosius or Justinian.

The coronation of Charles the Great, as emperor, has

given rise to many theories in explanation of what was undoubtedly a usurpation of the rights of the Byzantine monarchs. The circumstances of the time, however, are its justification. Imperial rule was already extinct in Northern Italy, and nominal only in other parts of the peninsula. None of the popes, for fifty years, had sought the confirmation of his election at Constantinople, and Christendom had no temporal head; for the Empress Irene had recently deposed and blinded her son, Constantine VI, and the throne was degraded. The senate and people of Rome had a more valid right to impose a master on the seat of empire than the heretical factions in Constantinople, and, as Charles already possessed the imperial power in reality, it was only fitting that he should be clothed with the outward dignity.

Four hundred years later, when the Popedom and the Empire were in mortal strife, three theories were propounded by the hostile parties. The Emperors regarded the crown as a conquest inherited from their great predecessor; Roman patriots upheld the ancient rights of the senate and people; and the Popes asserted that it was entirely in their gift as the viceregents of God. None of these theories represented the matter fairly, and it would be more accurate to regard the coronation as the revival of the one sole and undivided empire before its separation into East and West, and the restoration of Rome as the civil and ecclesiastical metropolis of the world. It was the source whence the doctrine was derived which lay at the foundation of the political system of mediæval Christendom; namely, that there was a temporal supremacy corresponding to the spiritual supremacy, and that, by this temporal supremacy, the Emperor was entitled to the allegiance of all other secular rulers, just as the Roman Pontiff claimed the allegiance of all ecclesiastical powers. The Church and the Empire were, by this view, two aspects of the one universal Christian

society: the divine and the human, the spiritual and the temporal. It was a perfect and self-consistent scheme of the union of Church and State, but its practical success depended upon a clear definition of the boundary between the spiritual and temporal sovereignties, and a perfect willingness on the part of both to rule the world as equals, while independent and supreme within their respective jurisdictions. This perfect harmony between the two powers implied, however, an amount of subordination scarcely compatible with freedom. Sacerdotalism, when represented by such minds as Hildebrand, Alexander, and Innocent, will exalt its own dignity, and demand the submission of the civil government.

Crowns must bow when mitres sit so high.

So, also, will Imperialism assert itself over all orders and conditions of men, when wielded by a Charles the Great, a Henry III, or Frederick II. There are only two alternatives—either the total separation of Church and State, which means the perfect equality and toleration of all forms of Christian faith and worship, each independent and self-supporting: or the union, in one and the same hand, of the direct control of all causes, spiritual and temporal. It is the conflict between the Popedom and the Empire for this direct control, that we have to consider in this discourse.

The latter alternative was the policy adopted by Charles the Great. Throughout his reign, he was an ecclesiastical, no less than a civil, ruler. He summoned and presided in all councils, and issued all canons and statutes in his own name. His imperial commissioners inspected and reported upon the conduct of bishops and abbots, as of nobles and knights—upon churches and monasteries, as upon castles and towns—defining the duties, settling the tenures, and determining the revenues. In the great council held at Frankfort, six

years before his imperial coronation, the clergy appeared for the first time as feudatories around the throne of their liege lord, with only a remote acknowledgement of their spiritual lord at Rome. As Emperor, it was his legitimate function to undertake the protection and control of the Church and the Holy See ; and, in a Capitulary enacted at Aachen, two years after his coronation, he enjoined all persons within his dominions, as well ecclesiastical as civil, to swear allegiance to him in this character of the sole absolute head of the Christian State.

The great emperor, however, had set up a theocracy which he alone could maintain. His son and successor, Lewis the Pious, lacked the strength to grasp the sceptre which had passed into his hands ; and he was equally unable to restrain either the turbulent feudal aristocracy, or the aggressive hierarchy. The latter had been advancing for some time far beyond the ancient boundaries of their order, and imperceptibly trespassing upon temporal ground. Even Charles himself unconsciously aided this movement. The Church was one of the means by which he consolidated his kingdom. While his lay subjects lived under their respective national laws, and were, in a legal sense, disunited, the Churchmen were an organised body, bound together by one code applicable throughout all the imperial dominions. Ranking with the aristocracy, they still retained that sympathy for the old inhabitants, which the Latin clergy had always shown for the vanquished race. This double relation, combined with their intellectual skill and higher intelligence, qualified them, in the Emperor's estimation, as the most suitable instruments for his reforms, and the best counterpoise to the reckless violence of the lay chieftains. He accordingly attached them to himself, by the grant of many privileges and immunities, and permitted and encouraged the growth of their power. They, in turn, looked up to him

as their friend and patron, from whose generous hand fell high places, rich abbeys, and powerful bishoprics. But when the strong hand of their master was withdrawn, all this wealth and influence, which had been given them for the public weal, was turned to their own aggrandisement. The old Latin hierarchy, grown effete and dissolute, had now died away. A sterner race had stepped into their benefices—Teutons—men of royal or noble birth, remarkable for ability, devotion, and asceticism, and bent upon the augmentation of their power, their wealth, and their immunities. These fierce ecclesiastics laughed at control. They aspired to be co-legislators in the diets, and sole legislators in the synods. They openly declared it to be their purpose to constitute themselves a separate caste, independent of the State, and superior to the Crown. Even kings, they asserted, were not exempt from that general obedience enjoined by the Apostle. In the Diet of Aachen, held in the third year of the reign of Lewis the Pious, they succeeded in wrenching from the civil power a great part of its control over spiritual preferments. Bishops were again to be elected by the clergy and commonalty, and abbots by the brotherhood of monks, without any intervention of the crown; and the whole property of the Church was declared to be under their indefeasible, irresponsible administration. This extraordinary growth of the higher sacerdotal orders, who

Climb'd the throne, and almost clutch'd the crown,

spread in all the feudal kingdoms, and the foundation was then laid of those princely national churches in France and Germany, which, while acknowledging subordination to the see of Rome, soon began to assert their local independence, to pay little heed to its authority, and in their synods not unfrequently to ignore its pretensions.

By the end of the ninth century the great Frankish dominion was broken up into separate kingdoms, and the Popedom, as well as the Empire, was thrown into confusion. The crown of the West became a prize for contending princes of different dynasties and countries, now of Italy, now of Germany, now of Gaul. Authority everywhere was transitional, uncertain, and fluctuating, and none of the sovereigns who obtained the imperial office was qualified to enforce its claims, or impart to it any settled character.

The supreme spiritual dignity of Christendom lay at the disposal of the factious rabble of its capital; the most revolting scenes disgraced the elections; the pontiffs were of infamous reputation; and it was only reverence for the chair of St. Peter that preserved to the Popedom any semblance of authority. Western Christendom was at length roused into indignation and alarm, and Otto the Great, King of Germany, who had extended and consolidated his dominions, and was at the time the greatest sovereign in Europe, descended into Italy with an overpowering force, restored order, and was crowned King of Italy and Emperor.

This assumption of the imperial crown by the German king was the true beginning of the Holy Roman Empire of Medieval Europe; and from this time, all the ideas, traditions, and beliefs which men attached to that remarkable institution, assumed a clear and definite form. Henceforth the Empire was always associated with the German kingdom, and the connexion brought many grave consequences to both. This is not the place to follow out these consequences in detail, but it may be noted in passing that the union was the primary cause of all the divisions which, for centuries, prevented the amalgamation of the German people into one nationality.

Under Otto, Germany was to a large extent moved by a single will; his father, Henry the Fowler, had laid deep the

foundations of royal power, and he had erected thereon a monarchy which was strong and well organised, in comparison with contemporary France under Hugh Capet, or the England of Ethelred II. The imperial dignity, with all its solemn associations and its claims to absolute and universal obedience, seemed to strengthen this power, and to give the German king a higher claim to rule than what could be derived from feudal rights and customs. And at first its operation was in this direction ; for the sovereigns naturally put forward their higher titles, and, growing adverse to the feudal polity, attempted to reduce local independence and assimilate the various races throughout their vast territories. It was Otto who welded the aggregation of German tribes into one political body ; they began to call themselves by the common name of “Deutsch ;” and they now showed the first indications of a consciousness of national life which never died out. But, nevertheless, the imperial crown was a fatal gift, which dazzled the vanity of the kings, and enticed them away from their duties at home. They were absent from their native land for years together, engaged in struggles beyond the Alps, when their energies should have been concentrated on the interests of their kingdom ; and, more than all, they were drawn into a conflict with the Popedom which undermined, and ultimately overthrew their authority. The great vassals took advantage of all these things to usurp rights which the sovereign was unable to recover, and at length compelled to confirm. Thus grew up those numerous independent principalities in Germany, which disintegrated the monarchy and almost annihilated every hope of national unity. Another evil also resulted. Otto’s coronation gave a more favourable opening to the now strongly developed claims of the spiritual power than had been offered since the foundation of the Teutonic empire. Like the great Charles, he was summoned to Rome by the

Pope, and swore to protect the Holy See and the liberties of the church. In pursuance of this oath, he considered it to be his duty and interest to imitate the policy of Charles by elevating the importance of the prelates, and endowing them with large estates, civil and criminal jurisdiction, and other sovereign rights to counterbalance the power of the great feudal princes. So long as the church and the empire were at peace, and the Popedom dependent, as it was under Otto and his successors for the next hundred years, the evils of this policy were not felt; the hierarchy upheld the imperial authority, and their influence was unquestionably, on the whole, more beneficial than that of the rough, secular nobility. But when the Empire and the Popedom were placed in conflict, they obeyed the authority which had the most sacred claims on their loyalty, and wrought the ruin of the power that had raised them, more than any one of its open foes.

The reign of Otto was all too brief for the permanent establishment of order south of the Alps. On his death, Italy relapsed into anarchy, and the Popedom into its violence and impurity, relieved only by the momentary brilliance of Otto III, and his learned and virtuous tutor, Gerbert, whom he raised to the chair.

Under these illustrious rulers, Church and State were, for a brief space, in perfect accord. It was a solemn and momentous period. The thousandth year of our Lord had arrived, and a deep and settled apprehension filled the minds of pious men that the second advent of Christ was at hand. The secular and ecclesiastical potentates, in Italy and Rome, were not disturbed by any such misgivings; but the young and visionary mind of Otto was fired with the design of opening out the new millenium with the foundation of a new empire, which should comprehend all Christian kingdoms as its provinces. Rome, again, should be the centre of the

world; and, from the Eternal City, the two supreme powers, working harmoniously together, each in his separate sphere, should promulgate laws for the regeneration of mankind. The imperial dreamer was blind to the actual condition of the world before him: Germany rude, Italy restless, and Rome corrupt and faithless; and, when an untimely fate put an end to his schemes, Italy and the Popedom once more fell back into their former wickedness and disorder.

For the next fifty years, the pontifical office became the sport of the turbulent patricians and fierce populace of Rome; and again a deliverer came from Germany. The new vindicator of justice and order was the second Franconian Emperor, Henry III, under whom the Empire reached the meridian of its power. He had many of the best qualities of a sovereign; was of an upright and resolute temper; and being animated with deep religious feelings regarded the moral condition of the Church with serious concern. A disgraceful contest, in which three rival popes fought at the head of armed forces for the spiritual throne, had shocked even the reckless apathy of Italy, and Henry was solicited to interfere. He at once crossed the Alps, and summarily deposed them all. He then raised to the vacant chair the German Bishop of Bamberg, as Clement II, who crowned him emperor; and, authorised by a council which granted to him and his successors the right of nominating future popes, he appointed three other German bishops in succession. All these pontiffs had been educated in the great abbey of Cluny, and were devout men and energetic administrators; they restored, in great measure, the dignity and reputation of their office, and with them began a new era for the Church and the Popedom. But the earnestness with which Henry thus fulfilled what was regarded as the noblest duty of his imperial office, by reforming the Popedom and making the Church worthy of its mission, created grave

dangers for the State. The German nobles, no less than the Italians, were alarmed at his encroachments; the long degradation of the Holy See had only suspended, not extinguished, the policy marked out by former able pontiffs; and, it was quite improbable that, when a pope of proud and independent spirit, like Hildebrand, occupied the chair of St. Peter, he would be content to occupy a subordinate position. Henry did not live to see the reaction which his despotic, although severely just, rule produced. He passed away while still in the vigour of life, and the troubles, which might have been dangerous to himself, were destined to be fatal to his successor (Henry IV).

It is one of the marvels of medieval history that the Popedom survived the disgrace brought upon it by the odious and unchristian vices of its pontiffs. But in the opinion of that day, Christian faith was something quite apart from Christian morality. Religion had been narrowed to a mere assent to dogmatic truths, and an obedience to ceremonial observances. The vilest of sins was heresy. The incongruity, therefore, of a spiritual succession being maintained by irreligious men, and the sublime prerogatives of vicegerent of God, claimed by a pontiff who lived a profane life, did not present itself to that generation. Many pious souls, no doubt, were shocked and greatly offended by the spectacle, but these held the suppression of doubt and the support of the unity of the Church, under a divinely appointed head, to be the paramount duty of every Christian, and they waited patiently for the day of deliverance. A superstitious awe of the Holy See filled the minds of men of all ranks. Belief in its spiritual sovereignty had been the faith of Teutonic Christendom from the first conversion of the German tribes by St. Boniface; and, although Italians were too familiar with Vatican morality and the conduct of the Roman Curia to share in this veneration, they

were prompted, by national pride, to uphold the spiritual supremacy as a compensation for the loss of that imperial prestige which Rome had so long enjoyed. These influences, together with the innate vitality of the spiritual power, undoubtedly carried the Popedom through the long and dangerous ordeal from which it had happily escaped, and directed by a stern, unfaltering, and lofty spirit, it was now to enter upon that momentous struggle for supreme dominion, which was not to cease until the secular authority in the person of the Emperor was overthrown.

The Church had now been more or less subject to the Empire for over seven hundred years. Throughout a great part of this period she had been engaged in a desultory and intermittent strife with the temporal power, often asserting her independence, sometimes her supremacy; yet, always advancing to the realisation of those schemes which her pontiffs had planned for her ultimate ascendancy.

The first disputes turned on the respective jurisdictions of Pope and Emperor, and the limits of their mutual prerogatives. These jurisdictions and prerogatives were so conflicting in their nature—so indefinite—and involved in such endless perplexity, that it was plainly impossible to avoid a collision. Each was sovereign and subject at the same time. The Pope owed the Emperor temporal allegiance—the Emperor, as a son of the Church, was bound to render his spiritual father filial duty and submission. Each again claimed the right of confirming the election of his brother potentate, and also of pronouncing his deposition, with the sanction of a council. Without such confirmation, neither was considered to have a full legal title; and, in times of hostility, the Emperor did not scruple to set up an antipope, nor the Pope a rival emperor. When the Empire was strong, and the Popedom feeble, these adverse claims were held in restraint, but, no sooner were

the conditions reversed than their irreconcilable character at once became manifest. The right of the Emperor derived from Constantine and his successors was undeniable—it had received the sanction of papal decrees, and even Hildebrand did not ignore it. But it was jeopardised by the institution of the College of Cardinals, and the transference to this body of the sole rights of pontifical election, with such feeble reservation of the imperial prerogative that no pope, after the time of Hildebrand, thought of awaiting the assent of the Emperor before he was installed in the chair.

Papal elections thus being emancipated from popular and imperial control, Hildebrand, immediately after his enthronement in the spiritual sovereignty as Gregory VII, proceeded to put into operation the policy which had long been meditated, namely—the subjection of the Empire, and the erection of a vast spiritual autocracy like that prefigured by Augustine in the “*City of God*,” wherein a new Rome should rise and rule the world by religion, and the Pope should be the only Cæsar, and the only arbiter among nations. The success of this scheme depended, in the first instance, upon the accomplishment of three sweeping reforms—the enforcement of celibacy upon the clergy, the extinction of simony, and the prohibition of lay investiture. By the first of these, Hildebrand contemplated the erection of the clergy into an absolutely separate caste, every member of which, sacrificing family and country for the sake of his order, would acknowledge no allegiance except that which was due to the Church. By the second, he attacked many grave dangers to which the Church was then exposed.

Everything in the feudal age had an hereditary tendency. Benefices, rank, occupations, descended from father to son, and a similar custom was gradually creeping into the Church, in consequence of the large number of married clergy who had, in too many instances, purchased the

preferments they transferred to their children. The higher dignities of the Church, which were professedly open to all men, irrespective of birth, were in danger of falling into the exclusive possession of certain distinguished families—nepotism threatened to become universal. The influential position of the clergy, their inordinate wealth, and their numerous privileges and immunities, had tempted men from all quarters, and with every kind of worldly motive, to enter holy orders. Spiritual dignities were degraded into mere offices of profit and reward. An impoverished sovereign sold them for the sake of revenue; an ambitious one conferred them upon his creatures as the recompense of servility. Even in Rome, everything had its price, and the papacy itself was notoriously bought and sold on several occasions. The Church was thus being rapidly secularised. Clerical duties threatened to sink into mere routine, and clerical morals to be no better than those of the laity. The spiritual character of the clergy was obscured by their employment as councillors of state, ministers of kings, governors of provinces. Bishops and abbots were practically laymen, invested in mitres and cowls; and it was said that prelates were better acquainted with the laws and usages of war than secular princes.

In the opinion of Hildebrand, the root of all these evils was Lay Investiture. If this source of abuse were removed, the property of the clergy, relieved from the bonds of feudalism, would become equally inviolable with their persons, and the entire spirituality, from the Pope down to the lowest ecclesiastical functionary, would be altogether independent of the civil authority.

Lay Investiture was too frequently used as a cloak for simony. At every act of promotion, grant, or enfranchisement, it was the feudal practice to make an offering to the sovereign or liege lord, and to give largesses to the people.

These donations, at first honorary and voluntary, were, in course of time, exacted as a customary tribute. In this way, the distribution of church patronage, by secular princes, afforded special facilities for the growth of the abuse, and it was here wherein the mischief lay, and not in the sovereign's right of control over fiefs. If the Church had been satisfied with the tithes and voluntary offerings of her congregations, the clergy would have been clear of the scandals which so flagrantly injured their sacred character. But, so long as they persisted in holding vast estates, they were bound by the laws which regulated those estates; and, so far, they were justly subject to the authority of the State. The Church, in short, had surrendered a part of her independence, in return for ample endowments, and the power they conferred. The claim of the feudal superior to demand homage from a bishop, when invested with the temporalities of his see was, consequently, only fair and reasonable. The expressions used in the ceremony were, of course, limited to his duty as a citizen, and could in no sense be extended to his priestly functions. But, unfortunately, the ring and crozier, the spiritual symbols of his office, were delivered to him in the ceremony, just as arms were handed to a military tenant; and, as the latter custom signified that the weapons were to be employed in the service of the lord, a similar construction might be placed upon the other. Obviously, this mode of granting investiture to a spiritual person tended to present the temporal lord as the source of ecclesiastical jurisdiction, and the sovereign as the virtual head of the Church in his own realm; and the only trace of a prelate's subordination to the spiritual head of the Church lay in the pallium conferred by the Roman pontiff. The advocates of the temporal power disavowed this view. They maintained that the sole intention of the ceremony was to make a bishop the tenant of his episcopal fiefs; and,

thereby guarantee to him, in return for homage, the protection of the civil power in the performance of his sacred functions. Thus interpreted, Lay Investiture was no more than the outward mark of allegiance, and the acknowledgment of the secular supremacy over the estate and its feudal obligations.

When we consider how easy of adjustment were the points at issue in the quarrel which presently followed, and how readily justice might have been satisfied, it is lamentable to think that the greater part of Western Christendom should have been convulsed by a long and bloody war, before a settlement could be effected. But the ostensible point in dispute was not the real object of the conflict. Gregory was resolved upon achieving, first, the total independence, and next, the complete ascendancy, of the Church over the Empire; and the battle was to be fought until one or the other power was absolutely subdued.

The time was opportune for the Church. Gregory, mature in age, was one of those rare men who, full of the courage of their convictions, are prepared to risk all consequences in the prosecution of their designs. The Emperor, young in years, had passed through a troublous minority, without being trained to the duties of his station, or in any knowledge of men and affairs. He was not without great qualities and high abilities; but these were only developed by his subsequent adversities; and in the earlier part of his reign, the gross irregularities of his life, his injudicious rule, and despotic treatment of the princes, gave such general offence that his subjects would have rejoiced at his deposition. The Empire was thus at the lowest state of weakness—the Popedom almost at the fulness of its strength—when Gregory threw down the gauntlet at the temporal power.

The first blow came in the form of a decree which

prohibited every married priest, and those who had obtained preferment by simony, to exercise the sacred ministry, and interdicted the laity from hearing their Mass. Clerical marriage was not held in general approval, while no one justified simony; the Emperor, accordingly, was not unwilling to enforce the mandate. But, in less than a year, the decree was followed up by the more famous fulmination against Investiture by laymen, which struck at the chief feudal tie that bound the vassals to the crown, and aimed a deadly blow at all secular authority. War was then inevitable.

At first, Henry was not in a position to resent the aggression. Hitherto he had treated the Pope with the greatest respect; and it was believed at the Vatican that his supposed feebleness of character, his general unpopularity, and a formidable revolt of the Saxons, against which he was doubtfully contending, would induce his submission to the decree. These anticipations were not realised. Henry quelled the revolt; the married clergy of Germany and Italy, a powerful body, expressed their determination to resist; and an outbreak in Rome, which endangered the Pontiff's life, shewed that Gregory was not quite secure himself, even in his own city. So the decree was ignored, and investitures were granted just as of old, without any concern for papal sanction or opinion. Gregory then despatched a conciliatory letter of remonstrance; but while his words were smooth and peaceful, he had war in his heart, and the letter was immediately succeeded by a peremptory summons to Henry to appear in Rome on a day named, to answer for all his offences before the papal tribunal. Confident in his strength, after his recent victory over the Saxons, Henry treated this summons with the contempt he had shewn for the decree; but instead of answering it at Rome, at the head of his legions, as some of his predecessors would have done,

he foolishly called a synod of German bishops at Worms, and pronounced Gregory's deposition. The answer was a "bull," excommunicating the German king, dethroning him, and releasing his subjects from their oath of allegiance. From that moment, the whole of Germany, and a great part of Italy, were divided into two hostile parties, which, under the names of Guelfs and Ghibellines, in later times, kept the two kingdoms in a perpetual ferment for the next two hundred years. Henry's enemies openly accepted the papal sentence, and prepared for the election of a new sovereign; while his friends, awed by the superstitious dread of Rome, either wavered in their loyalty, or gradually left him to fight the battle alone. In this desperate strait, he felt that reconciliation with his formidable adversary could alone save his throne, and crossing the Alps in the depth of winter, accompanied only by a single knight, and the heroic wife who had clung to him in every trial, undeterred by his cruel indifference, he made that memorable and ignoble submission to the Pope, in the castle of Canossa, which is one of the most astounding events in the history of Europe. The humiliation of the temporal power was then complete, but the triumph of the Church was too sudden and premature. Gregory marred his cause with over-violence, and a strong feeling of indignation and disgust excited Germans and Italians alike. Henry soon found himself surrounded by those who had forsaken him; the German cities, led by Spire, Worms, and Liege, came to his aid; the rival king whom Gregory had set up was defeated and slain, and the war being carried into Italy, the Pope was driven from Rome, into exile among the friendly Normans of Apulia, where he died, an antipope meanwhile crowning Henry emperor.

The spirit which Gregory had communicated to the Popedom was not destined to expire with him; his policy

was continued by successors not less resolute, but more subtle and relentless, and these stirred up dissensions among the nobles, and revolts in the emperor's own household. His son, Conrad, was set up against him in Italy, and his favourite son, Henry, in Germany; and the latter at length dethroned his father, and succeeded to the crown. Paschal II, who had instigated and encouraged these unnatural revolts, thought to profit by the change. But he was bitterly mistaken; and the new sovereign, instead of surrendering the obnoxious prerogative, declared his resolution to maintain every right which had been exercised by his predecessors. When he passed into Italy, to be crowned at Rome, Paschal declined to perform the ceremony until he yielded, whereupon Henry seized both Pope and cardinals, and extorted their consent to a treaty which, in return for his surrender of investiture, withdrew from the church all the territorial possessions and royalties which had been granted to her in Germany and Italy since the days of Charles the Great.

This outrageous proceeding excited the indignation of the ecclesiastical world. To the prelates of Lombardy and Germany the treaty meant exclusion from the ranks of the great aristocracy, and from all their positions of influence and command in the diet, the court, and the camp. Confined to their cathedrals and dioceses, the clergy henceforth would be their only vassals; their sacred character their sole title to honour; their only revenues the tithes and voluntary oblations of the faithful. And while they incurred all this loss of outward show and temporal influence, the two principals in the treaty sustained no diminution of their privileges and prerogatives. The Pope still remained a temporal prince, with all the powers of a sovereign—the Emperor, enriched with the lands of the church, was freed from the salutary check of the great ecclesiastical feudatories. Such

an unjust agreement as this bore its own condemnation, and Paschal, once set free, retracted his consent. Hostilities then broke out afresh, and were protracted for ten years, when all parties became weary of a strife which it was felt ought to be settled by mutual concessions. The outcome of this feeling was the Concordat of Worms, concluded in 1122. By this compromise the Emperor limited investiture to the touch of the sceptre, and granted to the clergy free election of bishops, on condition that the proceedings took place in his presence, or that of his commissioners. The strife between the Church and the Empire thus closed had continued for nearly fifty years. Germany had been wasted by civil war, and Italy ravaged by repeated invasions. One Emperor had been reduced to the lowest degradation, and more than one Pope exposed to personal insult. The end of all this was apparently a drawn battle—but the advantage was really on the side of the Holy See. It had secured its independence of the empire, and its general authority was immeasurably higher than when the quarrel began. The question of supremacy yet remained to be fought out—the Emperor still received his crown from the sacred Pontiff, but in what capacity had never been clearly defined. The contest for this now demands our attention.

By the constitution of Charles the Great, the Transalpine hierarchy owned no superior above the Emperor. Papal schisms, conflicts with Italian foes, and the incessant tumults of the Roman citizens, kept the Popedom in subjection to the temporal power. As long as the empire preserved its unity, this ascendancy continued. But when the sons of Lewis the Pious waged those endless wars which produced repeated partitions of the imperial dominion, there existed no government strong enough to maintain the law; and the Church felt that its vast wealth and estates were a source of danger in such a lawless time.

The erection of an authority which could enforce general respect and overawe the turbulent was an absolute necessity. It was probably this conviction that suggested the *False Decretals*—the object of Pope Nicholas I, who now published them, being to strengthen the ecclesiastical power, and show by the testimony of ancient documents and venerable tradition, that Rome had been the immemorial court of appeal, and her bishops the sole legislative and administrative authority in the Church. From this time the nature, extent, and attributes of the papal sovereignty were more clearly set forth, and that centralising process began by which the Roman Pontiff grew into the supreme head of Christendom. Hadrian II, the successor of Nicholas, hastened to bring the principles of this new code into practical application. On the death of Lothair, he claimed the right of bestowing the crown on the Emperor Lewis. It was an imprudent attempt. The haughty feudal hierarchy of the Franks was not disposed to accept such a bold extension of papal prerogative. In the miserable civil wars just referred to, they had themselves awarded empire, and deposed kings. They resented Italian intrusion as an impertinence, flatly telling Hadrian that he could not be at once “universal pope and universal king.” Hadrian’s successor, however, John VIII, persisted in the claim; and, at the coronation of Charles the Bald, he used language which represented the Empire as a grant from the Holy See: it was not an hereditary dignity, but a gift from heaven, conveyed at the will of the Pope, as the Vicegerent of God. The title of Charles being questionable, he was willing enough to receive coronation on any terms, but subsequent popes never dared to address to his Saxon and Franconian successors language which he was too feeble to resent, and the pretension was held in reserve for the first convenient opportunity. This occurred under the English

Pope Hadrian IV, when the redoubtable Barbarossa wielded the imperial sceptre with a more resolute force than had been experienced since the rule of Charles the Great.

This illustrious hero of German legend and romance entertained the same views of the Empire as Hildebrand did of the Popedom—his power was derived from God alone, and no Christian potentate, not excepting the Pope himself, was either his equal or superior. Hadrian's conceptions of his own dignity were quite as lofty, and his spirit and courage equal to their enforcement. It was he who sanctioned the English invasion of Ireland, on the novel and extraordinary plea that all islands were the exclusive property of St. Peter, disposable at the will of his successor. Two such potentates as these were thus bound to come into collision on the question of their respective prerogatives, even if there had been no other grounds of dispute between them.

The latter were mostly connected with the sovereignty of Italy, where imperial authority had always stood lower than in Germany, and rested entirely on force. From the time of Otto the Great, the rich and populous cities of Lombardy had been gradually acquiring a kind of semi-independence, not disputing the King's sovereignty, but paying little regard to his officials, and managing their affairs by their own elected magistrates. The large majority of their clergy were married, and, consequently, opposed to Hildebrand's reforms, for which reason, they assisted the Emperor in the contest about Investitures; but rather as allies than subjects, for they soon after went over to his enemies, induced by papal envoys to resist any further interference with their affairs from beyond the Alps. The Popes were already aiming at the liberation of Italy from all rulers except themselves. They were the suzerains of the Normans in the South, and the patrons of the municipalities in the North; and, in order to carry out still further the scheme of temporal

dominion, Hadrian now demanded from the Emperor, the restitution of the Tuscan territories, which the Countess Matilda, the firm friend and ally of Hildebrand, had bequeathed to the Popedom. He was also bent upon obtaining the sole and uncontrolled government of the city of Rome, where he had just restored the authority of the pontiffs, after a long and dangerous rebellion.

Twenty years, or more, before Hadrian's accession, the spirit of freedom had been roused among the citizens by the preaching of Arnold of Brescia, a pupil of the celebrated Abelard, who excited all Lombardy by the eloquent and vigorous discourses he delivered in his native city, denouncing the ambition of the priesthood, their wealth, and their temporal power. All the clergy, he said, from the Pope down to the lowest priest, should return to their primitive and apostolic poverty, sustained only by the tithes and first-fruits of the people. Their lands and royalties should at once be secularised and revert to the civil power, which should be supreme over all, clergy and laity alike: but, that sovereign power should reside with a popular assembly, and not with an Emperor. These revolutionary doctrines greatly alarmed the bishop and nobles, and the wealthier clergy, and Arnold was condemned and banished. In a few years he again appeared in Rome, where the citizens had thrown off the temporal authority of the Pope, and set up a commonwealth with patrician, consuls, and senate. This republic had passed through a fitful career of ten years, at the accession of Hadrian, and it was then demanded that he should confirm the free constitution so established. His refusal brought on a tumult, in which a cardinal was slain. The city was then laid under an interdict, and Arnold was again driven into exile; but, he subsequently fell into the hands of the Emperor, was given up to the vengeance of the Pope, and burnt alive.

Such was the condition of Rome and Northern Italy when Barbarossa crossed the Alps, filled with the lofty ideas of that absolute sovereignty which the civil lawyers had taught him, and inflexibly determined to enforce his imperial rights to the utmost extent of his power.

The Lombard municipalities were not prepared to resist such a formidable and imposing force as now swarmed over their plains, and the Emperor, after receiving the iron crown at Pavia, advanced southwards with slight interruption. Hadrian had observed all his movements with jealous apprehension, but resolved withal to maintain his rights and dignity. When he came out from Rome to meet the Emperor, the latter showed no disposition to render the homage which Lothair had made, by holding the stirrup as the Pope alighted from his palfrey, and a dispute arose which ended in imperial submission, but only for the moment.

The coronation over, and his imperial authority in the peninsula thus solemnly acknowledged, Barbarossa retired beyond the Alps, and Hadrian, relieved from his presence, resumed his communications with the cities and the Normans of Sicily, which had for their object Italian independence of German rule.

An open rupture presently broke out at the Diet of Besançon, in 1157, where the Emperor held his court with unusual splendour, in order to add greater pomp to the assertion of his sovereignty over the kingdom of Burgundy. This display of the magnificence of empire was destined to be rudely marred. The papal legates who attended the diet, presented letters in which Hadrian expostulated with Barbarossa on some slight grievance, and urged him to show himself more worthy of the kindness of his mother, the Church, which had given him the imperial crown, and would confer on him "greater benefits" if possible. This ambigu-

ous phrase "*majora beneficia*" was taken in its feudal sense by the fierce magnates present, and they supposed it to mean that the Pope regarded the empire as a fief or benefice held from himself. Such of the nobles as had been at Rome, remembered the arrogant lines which had been inscribed beneath the picture of the Emperor Lothair at the feet of the Pope, doing homage as a vassal.* This inscription, and the general insolence which pervaded Hadrian's letters, confirmed their interpretation of the obnoxious words. Indignant murmurs broke from the assembly; and their wrath was exasperated by one of the legates rashly exclaiming: "From whom then, if not from our lord the Pope, does your king hold the empire?" On which, Otho of Wittelsbach, Count Palatine, was with difficulty prevented from cleaving the skull of the audacious priest. The authority of the Emperor appeased the tumult; but he issued a spirited appeal to the nation, and revenged the insult by absolutely prohibiting all German ecclesiastics to visit Rome on any business whatever. The loss of revenue to the Holy See caused by this measure, together with the remonstrances of the German bishops, who were now princes more than churchmen, obliged Hadrian to explain away the offensive expression, and remove the picture.

The quarrel was renewed soon after by other causes, and came to centre round the Pope's demand for the sole government of Rome, independent of imperial control. Barbarossa's emphatic refusal elicited a threat of excommunication and another expostulation, in which he was reminded of a time when the Germans had not as yet the empire—that the empire was transferred from the Greeks to the Teutons—that the king of the Teutons was no more than a king until the Pope consecrated him Emperor, and that what the Pope

* *Rex venit ante fores, jurans prius urbis honores
Post homo fit Papæ sumit quo dante coronam.*

thus gave he could take away. This language was not calculated to soften a temper like that of Barbarossa, and in his rejoinder he scornfully referred to the humble relation which the Roman bishop held to Constantine, and declared that all the Popes possessed had come from the gracious liberality of his predecessors. An open declaration of war would have followed upon this, if Hadrian had lived ; and he had already prepared for hostilities by a secret treaty with Milan and her allied municipalities, which bound themselves to make no peace with the Emperor without the consent of the Roman pontiffs.

The inevitable war burst out immediately after his death. The election of his successor was conducted amidst unseemly violence and levity—the Imperialists declared Victor IV duly elected—the Churchmen, Alexander III (the legate who risked his life by his dauntless language at Besançon), and a conflict began, momentous for the empire, which lasted for twenty years. This conflict, although apparently between rival Popes, was in reality a final effort on the part of the secular monarch to recover his command of the priesthood—like the contemporary, but more limited conflict, between Henry Plantagenet and Thomas à Becket. If Alexander had not been supported by the Lombard league, all his genius and resolution could not have saved him from the Emperor ; as it was, he was compelled to take refuge in France for three years. But the German hosts, in front of Rome, were suddenly swept off the earth by a pestilence. Barbarossa subsequently suffered a signal defeat at Legnano from the forces of the Lombard Republics, and the grand project, to which the mightiest prince of his time had devoted all the energies of his life, was utterly annihilated. Pope and Emperor then accepted the mediation of Venice—and the temporal lord of the world bent himself in homage to its spiritual lord, under the portico of St. Mark.

In that temple porch
(The brass is gone, the porphyry remains)
Did Barbarossa fling his mantle;
And, kneeling, on his neck receive the foot
Of the proud Pontiff—thus at last consoled
For flight, disguise, and many an anguish shake
On his stone pillow.

But, although so signally humiliated, the resources of Barbarossa were not exhausted; nor was his indomitable spirit quelled. His submission was only a form. He relaxed none of his authority over the affairs of the Church; the Tuscan territories were still unrestored, and he now prepared for future contingencies by the marriage of his son with the heiress of Sicily, and so annexing that kingdom to the Empire. This transaction, regarded by him as a master-stroke of policy, proved fatal to the Empire. The Popes were already the feudal lords of this Norman kingdom, and in the wars which Frederick II afterwards waged against the Popedom, the Emperor's position, as King of Sicily, placed him in the light of a vassal resisting his lawful suzerain. This deprived him of moral support in an age wherein princes were eager to show that law and right justified their quarrels; while his material forces were distracted by contentions at many distant points.

The struggle between this greatest of the Hohenstaufen princes and the Popedom was the last mortal conflict between the two powers. It arose out of no specific point in dispute; the contest was solely and avowedly for the supremacy. Frederick's views were as imperious and autocratic as those of the haughtiest churchman. The Empire and the Church were equally sacred in his estimation; the ban of the one ought to be held in equal awe with the excommunication of the other; disloyalty to the Emperor was as heinous a sin as infidelity to the Church;

rebellion and usurped independence, like that of the Lombard republics, were political heresy, not less punishable than the spiritual offence. The character of Frederick was such as appeared able to maintain these views, and to achieve and perpetuate the vast design he had formed of a universal monarchy, hereditary in his house. Himself a poet, philosopher, and linguist, he was the generous patron of arts and letters, and men called him the "Wonder of the world." His ideas of government went far beyond those of his own day with regard to equal justice, the toleration of adverse creeds, and the promotion of commerce and peace. But he was an anachronism, and, with all his high abilities and noble qualities, he accomplished little of lasting importance. While his resources were wasted in a long conflict with the Lombard cities, and in defence of his kingdom of Sicily, his long absences from Germany gave the princes abundant opportunity for seizing one royal right after another; and, in the end, he was compelled to confirm them in the sovereignties they had usurped, reserving to himself no more than a nominal superiority. Imperial jurisdiction then became limited to the Emperor's own hereditary territories and the cities dependent on the crown; Denmark, Poland, and Hungary fell away from their allegiance; Burgundy was absorbed by France; Italy and Sicily no more acknowledged a German master. The Empire never recovered itself after this, and, so far from being able to look down on the Popedom, it was too feeble to maintain itself even on an equal footing.

No emperor, since the time of Henry III, had now exercised the right, then undisputed, of naming or confirming the election of the successor of St. Peter. On the contrary, the pontiffs had excommunicated and deposed emperor after emperor, and, although the sentence of deposition did not result in any practical effect, the preten-

sion was maintained, and by none more than Innocent III, under whom the Popedom reached the culmination of its power. In the ten years' civil war between rival emperors, that preceded the accession of Frederick II, this able pontiff assumed the further right of revising the imperial elections, and rejecting any prince elected whom he judged to be unsound—impatient, that is, of priestly control. Both competitors for the throne had sought his intervention; and, in an oration to their ambassadors, before a full consistory of Cardinals, he took occasion to proclaim the absolute supremacy of the spiritual over the temporal power, reviewing the whole of the Old Testament in support of his assertions, and concluding with a repetition of the papal version of the "Translation of the Empire" which had so sharply irritated Barbarossa.

The ascendancy of the Church over the Empire was now unquestioned, and Albert of Austria completely humbled himself before Boniface VIII, swore fealty to him, and acknowledged that all his authority was derived from the Holy See.

A patriotic feeling was at length stirred within the sluggish bosoms of the Germans, by the exactions and shameless subservience to France of the papal court at Avignon. Lewis IV., of Bavaria, having acted as king of the Romans, without papal sanction, was called upon to surrender his dignity, and present himself at Avignon to receive sentence. His bold refusal to obey the summons, or to acknowledge that his rank and power were derived from any one save the electors, brought upon his head the usual bull of excommunication and sentence of deposition. But papal thunders had now lost their terrors in Germany, and, indeed, throughout Christendom. The days were gone when "the Gregories could tread the kings, their children, under heel." The religious orders, which had been the

main pillars of the Popedom under Innocent III, began to shew signs of insubordination, and the Fratricelli, or Spiritual Franciscans, who now seceded from the general body, under sterner vows of poverty and self-denial, proclaimed that their object in this secession was, to protest against the luxury and appalling degeneracy of the papal court at Avignon. These zealous reformers possessed a strong hold on the popular mind, and throughout Germany were the staunchest allies of the Emperor. While they were inflaming the populace with denunciations of papal ambition, arrogance and wealth, men of learning created no little sensation in the universities, by the fearlessness and acuteness with which they brought the dialectics and the new philosophical tenets of the schools to bear on the whole question of pontifical authority. Dante, the poet, in his *De Monarchia*, had then but recently shown that the Roman monarchy was held directly from God and not from any pope assuming to be his vicar. In his conception, a universal monarchy was necessary for the peace and welfare of the world. This monarchy was not a sacerdotal empire—that had ignominiously failed—but a dominion in which liberty was combined with justice; wherein the sovereign was not a despotic, but a constitutional, ruler, administering the Roman law, and leaving all the nations and the free Italian cities in full possession of their rights, and their old municipal institutions. Yet, while an emperor was needed to preserve universal peace, and be supreme in all that pertained to the secular world; so, also, was it necessary that mankind should be directed by a supreme Pontiff in all things that concerned their spiritual interests. Each supremacy should be co-ordinate, and rigidly confined to its own sphere. But since earthly things are subordinate to heavenly, so should Cæsar show reverence to the Head of the Church; not as a subject, but with the filial duty which a son owes to his father.

The controversy was now taken up by Marsilio of Padua, who discussed, in his great work, *The Defender of Peace*, the origin, principles, and limits of government, and of sacerdotal authority; and mercilessly exposed the hollowness of every papal pretension. More than all, William of Ockham, the famous English Schoolman, and one of the Emperor's counsellors, shook the hierarchy by the audacity with which he asserted the supreme rights of the temporal sovereign, and the boldness with which he refused to acknowledge in the Pope any authority whatever in secular affairs.

Every class of society in Germany was thus being roused into opposition; the princes, all the higher clergy, and the wealthier monks were in sympathy with the barefooted Franciscans; the cities, now filled with an industrious and intelligent democracy, were all with the Emperor; and the Pope, it was said, had but two adherents left among the whole of the German episcopacy. Resistance to Italian priestcraft became, in short, the test of Teutonic patriotism; and this new feeling showed itself unmistakeably in the famous meeting of the electoral princes of the Empire, held at Rense, near Coblents, in the summer of 1338. These magnates then solemnly declared that the Imperial dignity was derived from God alone; that it was by their choice the sovereign obtained his title of King and Emperor, and that he did not need the approbation, confirmation, or authority of the Apostolic See. In the same summer, the Diet, at Frankfort, confirmed this declaration, and passed it as a fundamental law of the Empire; and they further declared, that it was lawful for the Emperor to assume his full titles before he received his imperial crown from the Pope. Similar sentiments dictated the reforms of Constance in 1415; and the Empire might have risen again to something of its ancient dignity, if it had been ruled by princes equal to the occasion, and able to profit by the altered tone of public

opinion. But Lewis of Bavaria, in whose behalf these spirited protests of his States had been made, was constantly vacillating between the most haughty defiance of the Pope, and the meanest submission; and the Hapsburg sovereign, Frederick III, guided by his secretary, the famous Æneas Sylvius, afterwards Pius II, not only supported the Pope in opposing the reforms of the Council of Basle, but concluded with him the Concordat of Vienna, which restored to the Apostolic See all the rights that council had taken from it, and again gave it authority over the Empire.

At length came the Reformation, and an end of all the relations which had created so much strife and bitterness for well-nigh five hundred years. By the great medieval theory, the limits of Church and State were exactly co-extensive. Within these limits there could be only one Church and one Christian state, and every man, as a member of the one, was by consequence a citizen of the other. As the temporal head of this Christian state, the Emperor was invested with a religious character, and at his coronation he went through a form of religious consecration. Besides the sword, globe, and sceptre, the symbols of temporal power, he received a ring as the symbol of faith; he was ordained a subdeacon, assisted in the celebration of mass, and partook of the communion in both kinds like the priesthood. Furthermore, he was bound by oath to cherish and defend the Holy Roman Church; and the title which constituted his highest claim to the reverence of the faithful was that of "Defender and Advocate of the Christian Church." But when one half of his subjects withdrew from the Roman communion, and consequently from allegiance to him as its Protector, and yet acknowledged their obedience to be due to him as the supreme civil magistrate, the Emperor was placed in a curiously contradictory position. Rebels against him as Christians, they were loyal subjects as citizens; and only

those whose Church he was sworn to defend rendered him double obedience. It was, therefore, impossible for the Emperor to assume a perfectly impartial position towards his subjects. His imperial oath imposed upon him the duty of associating himself with the Catholics; and from being the head of the whole state, he became the chief of a party within it. Nor was this all. For seven hundred years, the Emperor had been recognised as the head of Christendom. The acknowledgment of his suzerainty, it is true, was more sentimental than real; still it existed, and had considerable political influence, notwithstanding that Europe had been broken up into hostile nationalities, which endangered the cherished scheme of a united Christian state. But the bonds which had held these politically disconnected states in one great spiritual communion were now rent asunder; the supreme imperial authority was rejected, equally with that of the pontifical, by the Protestants of every Christian kingdom; and the position of the Emperor again, in this wider sphere, was inconsistent with the actual condition of affairs. The effects of the formidable religious revolt of the sixteenth century thus very seriously affected the empire, both at home in Germany, and in its shadowy dominion throughout Europe. Instead of one Christian state, with one Church, there were now several Christian states, and two, if not three, Churches. This remarkable revolution was fully recognised in the famous treaty of Westphalia, which terminated the long Reformation struggle in Germany. The State then ceased to interfere with the religious convictions of its subjects. The Emperor could no more bind himself by oath to defend the Catholic Church; and although only the three creeds—Catholicism, Lutheranism, and Calvinism—were formally recognised, toleration in the largest sense was virtually conceded, and the principle established, once for all, that the temporal power had no legitimate

authority within the domain of conscience. From this time, the Empire ceased to exist, except in name, even in Germany. All the principles, by virtue of which it had lived through so many ages, were entirely gone. The new constitution recognised as citizens those who were the bitterest enemies of the Holy Roman Church, yet who, by the original doctrine being out of spiritual communion, should have been placed under the ban of the Empire, and declared excommunicate. The sovereignty of Rome was thus abolished—it was divorced from the empire, and the medieval theory of Church and State at last exploded.

Meanwhile the Popedom itself had fallen from its high estate. The growing spirit of nationality had undermined its authority, as it had that of the Empire. Strong monarchies and national churches had grown up, in the most important countries outside the territorial limits of the Empire; and they were not disposed to yield submission to any alien authority. While Hildebrand lorded it over the Empire, he was constrained to be courteous and conciliatory to England. Even the sainted Louis IX of France, a loyal son of the Church, not only discountenanced the unholy strife between the two supreme chiefs of Christendom, but positively refused to make war against the Empire, and denied the Pope's claim to the deposition of kings. Supported by his barons, he also issued the Pragmatic Sanction of 1268, which virtually secured the liberties of the Gallican Church against the encroachments of Rome. A strenuous effort was made by Boniface VIII to restore the waning authority of his chair. But the duties of his office now required the cool and penetrating wisdom of the statesman, and sagacity to perceive the tendencies of the age. The Popedom was not now held in that awe which enabled an Urban II to rouse all Christendom to a Crusade. A succession of weak pontiffs, the interested squabbles of the cardinals, long

vacancies in the pontifical chair, and other circumstances, had considerably lowered the Apostolic See in men's estimation ; while the never ending strife with the Empire, and the perpetual discord it entailed in every city in Italy by the bitter feuds between Guelfs and Ghibellines, had greatly weakened the Popedom even as a political force.

Looking back across six hundred years, with the light reflected by their history, it is easy for us to read the signs of the times, which this able pontiff, of indomitable will and imperious nature, was incompetent to decipher. Had he possessed this insight, and the power to read men as well, the humiliation and defeat awaiting him at the close of his contest with a politician so keen and unscrupulous as Philip the Fair of France, might have been avoided.

The consideration of this important struggle will form a part of my paper on the Church of France, and all that I need observe at present is that when Boniface, in his famous Jubilee celebration (1300), loftily declared himself to be Cæsar and Emperor—Church and State in one—and followed this up, in the equally famous decretal, "*Unam Sanctam*," in which he affirmed that the spiritual power ought to judge the temporal, and that God alone can judge the spiritual, this haughty pontiff was unwittingly presenting to the world another proof of the truth of the ancient proverb that "pride goeth before a fall." Not only did his own pontificate end unhappily, but, with his fall and death, the medieval Popedom, founded by Leo the Great nine hundred years before, came to an end. The Power which had so marvellously grown and developed throughout these long ages, until it became the centre of all spiritual law, the tribunal to which all Christendom could appeal, before which the highest and the mightiest were summoned to answer for their misdeeds, now lent itself a willing slave to the political ambition of the French monarchs. In the

short course of another century, it degenerated into a mere Italian principality, and from this position it has never since risen as a temporal sovereignty.

We have now passed under review the chief questions which affected the relations between the Church and the Empire for more than one thousand years. We have seen the Church dependent upon the State when the emperors were the real rulers in ecclesiastical as well as in civil affairs; and again, when, after a long and implacable strife, the spiritual authority rose to the ascendant, and the Roman pontiffs

Like gods, not men,
Moved this world at their pleasure.

While in both these positions each institution rendered a service to humanity, and the Church, in an especial manner, defended right, and justice, and mental freedom against brute force, neither position was free from danger. In the Eastern Empire, the ecclesiastical organisation was always overshadowed by the State; the priesthood sank into a condition of contented subservience, and their Church into absolute submission. The Russian national Church has inherited this position. It has no independent authority even in matters of simple administration; a lay official, appointed by the Tzar, directs all its affairs, and inertness, apathy, and intellectual lethargy are the characteristic traits of the clergy.* Such might have been the fate of the Western Church if Hildebrand and his successors had not withstood the Empire, and enabled the central authority at Rome to support the national churches in their contentions with armed and lawless power. But the deliverance which the sovereign pontiffs thus achieved was counterbalanced by the use which they made of their triumph. Champions of

* See Wallace's *Russia* II, c. xxvii

civilisation, freedom, and progress, while they resisted feudal tyranny, they became aggressors themselves when fixed in irresponsible power,

Subduing, chaining down
The free, immortal spirit.

And since the ideal they set up was so sublime, and so immeasurably superior to the reality which their conduct presented, the evil they wrought was so much the greater. Claiming to know what was best for men, and professing to rule them by appeals to the highest principles of human nature, the pontiffs descended to the crafts and devices they condemned in the temporal rulers, and so convinced the world that the loftiness of their dignity, and the sanctity of their office, were no guarantees against passion and corruption. Of all tyrannies, a sacerdotal tyranny is the worst, since it holds itself accountable to no earthly tribunal, and regards with disdain the censure of public opinion. Temporal potentates, whatever the nature of their government, are more or less amenable to their subjects, and are kept in check by laws and customs, or the force of national sentiment. If history has taught us that they cannot be trusted to interfere with the domain of thought and conscience, how much stronger should be the conviction that an irresponsible power, insisting upon the claims of tradition and authority, as of divine origin, against those of reason, should not be invested with a like control. The dominion of thought, morality and religion, is safest when left to the guardianship of liberty, and to the influence of a healthy public opinion, fostered and enlightened by a pure literature and an unfettered press, the forces which have achieved so much in the spiritual and political emancipation of mankind.



THE COMPLETE ANALYSIS OF FOUR AUTOPOLAR 10-EDRA.

BY THOS. P. KIRKMAN, A.M., F.R.S.

1. I am about to discuss thoroughly the genesis and construction of four autopolar 10-acral 10-edra, or more briefly 10-10, namely, three 3-ple Monaxine heteroids, figs. 86, 87, 88, and one Contrajanal anaxine, fig. 82, in Vol. xxxiii of the *Proceedings* of this Literary and Philosophical Society, page 152. This, as almost nothing of my method *ab initio* in the actual solution of the problem of the Polyedra has seen the light, (not even of the 7-edra has the demonstration yet been either given or asked for), will serve at least to shew how the answer to this defiant puzzle begins to evolve itself. I shall refer by (1), (2), (3), etc., to the figures 1, 2, 3, etc., in the plates annexed, in which are seen the above four autopolars A, B, C, D.

An A-gonal face A of the $(A + S)$ -acral $(F + 1)$ -edra is written A,SF, S being the number of summits not in A, and F that of the faces besides A.

It is often convenient, as we shall soon see, to write the same face thus, $A_{S-1, F-A}$; so that A_{00} is the base of the $(A + 1)$ -acral pyramid. The common edge of two faces A and B is written ABs(F-1), where s is the number of summits of the solid besides those of A and B, and F-1 that of the other faces of the solid.

2. *The autopolar A.* In A, the zoneless polar triace ($\acute{a}\acute{x}\acute{\eta}$) 1 crowns a 3-ple zoneless reticulation. Its three edges 12, 15, 18, are supposed above the paper, the other

nine summits being in or below it. The reticulation has a marginal triangle, and two diagonals 30 and 39, all thrice read. The contour of the polar summit 1 is 908765432, and it is registered in the tables of symmetric summits thus :—

$$3^3 79_{go,ed} = {}^6 1_0, \text{ in } 10-10.$$

Here the index 3 marks 3-ple zoneless repetition about the *gonoeedral* axis (go,ed), which is terminated by a solid angle 1, and a triangle 036; 7 being the number of faces not about the pole 1, and 9 that of the summits beside 1. The blacker figures denote faces. The upper left affix 6 affirms six diagonals of the summit; the zeros say, no delete and no effaceable of it. We could crown the same reticulation with two different 3-ple hexaces in 10-13, or with a 3-ple 9-ace in 10-16. The marginal triangle of a reticulation must be crowned, or there would be a linear section, Q. E. A. We never crown save with an edge an asymmetric reticulation—that is, we never construct an asymmetric summit. They are all known in number and in character by their reciprocal asymmetric faces. The symmetric summits in Q-P are obtained by coronation, and from them we know their reciprocal symmetric faces in P-Q.

3. The edges of the antipolar A are in number 18, all asymmetric, and all thrice read. We proceed to construct them all, viz., 12, 03, 93, 23, 29, 09.

Observation. A delete is always the undrawn diagonal of a face. The dotted lines in our figures are all deletes of the thicker constructed edges, and are to be read as undrawn. Each when drawn is an effaceable of that thicker edge, and adds a face under it.

Definition. The name *delete* (or *effaceable*) of a summit p , or of an edge e whose mid point is p , is given to a line undrawn (or drawn) qr , through two summits q and r , in a triangular section pqr of a polyedron, when and only when

qr , if drawn, is in a face which has no third summit of the contour of p or of the edge e .

Any diagonal of any face on the $P-Q$ can be drawn, and will be supposed drawn as one of a group in constructing tables of $P-(Q+1)$; but if there is no triangular section of the solid along that diagonal, it is, while undrawn, no delete of any summit p or edge e ; nor will it when drawn be an effaceable of any p or e . It will be an effaceable of the *solid*; and I have elsewhere explained the analytic and constructive importance of the *leading effaceable* of a *solid*. *Vide* our vol. xxxii, p. 217. This, however, does not here concern us.

4. *The edge 12 of A.* This (1) asymmetric edge 55 joins two summits supposed above the paper, and thus crowns the reticulation below the thicker edge 12. Of this edge, 03 is an effaceable, and 58 is a delete. The contour of the crowning edge 12 is 15432908; and 03, as well as 58, if drawn, is in a face that has no third summit of the contour in (1). But 03 is no effaceable of the summit 1 in A, for it is in no face that has no third summit of the contour of the triace 1; and 58 is no delete of that pole 1, for 158 is no triangular section of the solid A.

This 1 in A, having neither delete nor effaceable, is called a *propyramidal* summit in 10-10, and the figure crowned by the triace is a *propyramidal reticulation*. We shall presently see why.

We reduce (1) to (2) by deletion of the effaceable 03, making 12 an edge in 10-9. This (2) is reduced to (3) by exchanging the pentagonal contour 54308, under which are two summits 6 and 7, for another under which is only 6; *i.e.*, exchanging 5_{11} in 7-7 for 5_{00} in 6-6. The 5_{11} has under it one face and one summit more than 5_{00} has; and 5_{00} is the base of a pyramid whose vertex 6 in (3) hangs downwards. For this reason 12 in (3) is called a *pyramidal edge* 12. This (3) shews now an edge 12 in 9-8; and it is next reduced,

by convanescence of the edges 54, 43, 08, to (4). The 5-gonal base of the pyramid in (3) has vanished into the diagonal 58 of the edge 12 in (4), which is now an *epizonal* edge, i.e., cut by a zonal trace, and is registered:—

$$34_{ep} = {}^2_01_0, \text{ in } 5\text{-}5; \text{ a propyramidal edge.}$$

The diagonal of a face can be drawn in it. The diagonal of an edge (or summit) is always there under it. Across every edge e , or summit p , there is a triangular section of the solid, along every diagonal, delete or effaceable of e or p . Hence e or p , across which is no such section, has no diagonal, nor delete, nor effaceable.

5. The converse of this reduction of (1) to (4) is the construction of (1) upon (4). We imagine the diagonal 58 of 12 in the propyramidal (4) to expand into the 5-gonal base of a pyramid whose vertex hangs downwards in (3), and whose edges 58 and 30 appear in (3) as deletes of the edge 12, or, as we phrase it, the diagonal 58 of the *propyramidal* epizonal 12 in (4), has been *charged* with a pyramidal base 5_{00} , so that the propyramidal 12 in (4) has become the *pyramidal* 12 in (3). This pyramidal edge is registered (*as*=asymmetric),

$$55_{as} = {}^1_01_0^5 + \dots \text{ in } 9\text{-}8.$$

Instead of two diagonals in (4) this pyramidal edge 12 has one diagonal and two deletes. The suffixes 2 on the left and 0 on the right shew two deletes and no effaceable of 12 in (3). The affix 5 above on the right side shews the charge 5_{00} . We could have imposed this charge 5_{00} in (4) so as to make an edge 37, or 46, or 64, which differ from 55 in the upper edges contributed by the charge to the contour of the edge 12.

In the figure (4) 58 and 59 are for our purpose the same diagonal. It matter not which we charge; the results are counted the same, being one the other's image.

Instead now of the pyramidal 5_{00} in 6-6, let us conceive substituted, in the same position in the contour of (3), the

face 5_{11} in 7-7. This is done in (2) which is a *metapyramidal* edge in 10-9. How many faces 5 are there in 7-7? Our tables of 7-7 give, (*Proceedings Royal Society*, January, 1863):—

$$5^m 26 = 1, \text{ and } 5_{as} 26 = 1, \text{ in 7-7.}$$

Here *mo* stands for *monogonal*: the zonal trace passes through *one angle* only of the 5-gon, as perforce it must in every odd monozone face. The first being a monozone face is its own reflected image: the second is not. We can impose the former so as to place any of its five summits at the asymmetric summit 5 in (3), and to make (2); we can so handle both the latter and its reflected image seen in a mirror. Hence we register

$$55_{as} = 5 + 10 = \frac{1}{2} 15_0 5_{11} + \dots \text{ in 10-9.}$$

One of these 15 is our edge 12 in (2). They are 15 *cleared metapyramidal* edges 12 in 10-9, *cleared* of effaceables, as shown by the right suffix, and having each two deletes, and one diagonal. The upper right affix shows the metapyramidal charge. The preceding 55_{as} was a *cleared pyramidal* in 9-8.

When we have entered under 55_{as} in 10-10 all propyramidals, and all cleared pyramidals and metapyramidals, we look back at all the *cleared* edges 55 in preceding tables, in 10-A, and fill up our entry 55_{as} in 10-10 by the easiest of our tasks, *replacement of effaceables*, each adding a face, so as to make 10-edra. The right suffix will count these replacements.

We see in 10-9 fifteen 55_{as} , each having two deletes, just registered, in which, being asymmetric, the deletes must be different, so that *replacement* of each gives a different *uncleared* edge 55_{as} in 10-10. Hence we have the entry:—

$$55_{as} = \frac{1}{3} 30_1 5_{11} + \dots \text{ in 10-10.}$$

Our edge 12 in (1) is among the 30, and is the only one

of them found on an autopolar 10-10. Other uncleared terms will be added in the + ..., got from 55², and 55^{mo} in 10-9 that have two deletes.

Yet our task is not quite finished when we have entered all cleared and uncleared edges in 10-10. We require yet the edges across which is no triangular section of the solid. Such is the following:—

6. *Edge 03 on A.* This is an asymmetric diagonal drawn in a 4-gon 0936 of a solid in 10-9, (5). Our tables contain—

$$4^{ag} = H; 4_{as} = G, \text{ in } 10-9.$$

The former are monozone faces whose undrawn zonal trace is not diagonal, but *agonal*, through no angle. Each monozone gives one 33_{as} by a drawn diagonal: each 4_{as} gives two. We enter:—

$$33_{as} = {}^0(H + 2 G)_0, \text{ in } 10-10.$$

Our edge 03 is one of these.

7. *Edge 93 on A.* This is seen in (6). It is a metapyramidal 33_{as} , reducing first to the pyramidal 33_{zo} in 5-5 (7), and next to the propyramidal in 4-4 (8). We get (7) by charging not the diagonal, but the marginal triangle, of (8) with 3_{00} making 33_{zo} in 5-5 with one delete. For this 3_{00} we substitute 3_{55} to get (6) in 10-10. We register (7) thus:—

$$33_{zo} = {}^0 1_0^8, \text{ in } 5-5,$$

where *zo* means that the edge is in the zonal trace, not cut by it.

Our tables give us 3_{55} thus:—

$$3^{mo} = 62, 3_{as} = 1344; \text{ in } 9-9.$$

The 62 monozones have each one zonal summit to replace at 3 in (7) that of 3_{00} , and have each one zoneless angle for the same position. We enter the metapyramidals:—

$$33_{zo} = {}^0 62_0^{355}; 33_{as} = 62 + 3 \cdot 1344 = 4094^{355} + . \text{ in } 10-10.$$

If (7) had been asymmetric instead of zoned, the entry would have been

$$33_{as} = 3 \cdot 62 + 6 \cdot 1344 = {}^0_1 8250_{0^{55}} + \dots \text{ in } 10-10.$$

One of the 4094 is our edge 93.

8. *Edge 23 on A.* This (9) is got from the pyramidal 35, (10) which is built on (8), got by exchanging in (10) 5_{00} for 5_{33} . This 5_{33} stands in our tables thus:—

$$5^{mo} = 22, 5_{as} = 215 + \dots \text{ in } 9-9.$$

We have the pyramidal (10) thus registered:—

$$35_{as} = {}^0_1 1^5_0 + \dots \text{ in } 7-7.$$

Next, as this is asymmetric, we enter the metapyramidals thus:—

$$35_{as} = 5 \cdot 22 + 10 \cdot 215 = {}^0_1 2260_{0^{53}} + \dots \text{ in } 10-10.$$

Our edge 23 (9) is among these 2260.

9. *Edge 29 on A.* This uncleared metapyramidal (11), after deletion of 30, as in art. 4, reduces to (12) in 7-6, and the nto (8). For 4_{00} in (12) we put 4_{33} , giving a group of 35_{as} in 10-9. The pyramidal (12) is:—

$$35_{ep} = {}^0_2 1^4, \text{ in } 7-8.$$

We find 4_{33} thus in our tables:—

$$4^2 = 1, 4^{ag} = 7, 4^{di} = 5, 4_{as} = 70, \text{ in } 8-8.$$

In the first, the index 2 shows a zoneless 4-gonal pole of 2-ple repetition: this face has two different angles, either of which can become the angle 3 of (12); and, as (12) is an epizonal edge 29, we cannot use both the 4^2 and its reflected image: hence, by putting 4^2_{33} in the place of 4_{00} in (12) we get two different 35_{as} in 10-9, and only two.

In 4^{ag} there is a zonal trace cutting opposite edges; in 4^{di} is a diagonal trace, through two different angles. Hence two zoneless angles of 4^{ag} , and one zoneless and two zoned angles of 4^{di} , can occupy 3 in (12); and every angle of 4_{as} can occupy it. Hence, instead of our pyramidal 35, (12), we get the metapyramidals:—

$$35_{ep} = {}^0_2 10^4_{33}; 35_{as} = (2 + 5 + 14 + 4 \cdot 70) = {}^0_2 301_{0^{439}} \text{ in } 10-9.$$

In the 10 epizonals the deletes are alike, and replacement of either makes them all 35_{as} in 10-10. The deletes are not alike in any one of the 301 asymmetricals; so that we obtain by a replacement, which adds a face, the uncleared metapyramidal:—

$$35_{as} = 10 + 2 \cdot 301 = {}^0_1 612_1 {}^{4_{ss}} + \dots \text{ in } 10-10.$$

Our edge 29 (11) on A is one of the 612: they have all one delete and one effaceable.

10. *Edge 09 on A.* This cleared metapyramidal 35_{as} , (13) reduces to (4), whose marginal triangle is charged (14) by 4_{oo} . This (14) is registered:—

$$35_{as} = {}^1_1 1^4_0 \text{ in } 7-7.$$

Exchanging 4_{ss} for 4_{oo} in this asymmetric pyramidal, on which the 70 4_{as} in art. 9 can be laid each in eight ways, and the other 13 4-gons each in four ways, we get the metapyramidal:—

$$35_{as} = {}^1_1 612_0 {}^{4_{ss}} + \dots \text{ in } 10-10,$$

which have each one diagonal, no effaceable, and one delete; of these our edge (13) 09 is one. We have discussed all the edges of A.

11. *The autopolar B.* This B is made by crowning with a triace a 3-zoned 6,37 (15) in 9-8, so as to destroy the zones and preserve the 3-ple repetition. The polar summit of B is registered:—

$$3^3 79_{\text{roed}} = {}^0_0 1_0 \text{ in } 10-10.$$

The same face 6,37 can be crowned by many zoned summits.

We have to examine the six edges of B, 12, 23, 34, 45, 56, 41.

Edges 12 and 23 of B. These (16) (17) are asymmetric diagonals drawn in 5-gons in 10-9. These faces are:—

$$5^{mo} = J, 5_{as} = K, \text{ in } 10-9.$$

In each of the J can be drawn two, in each of the K can be drawn five, such diagonals. This gives:—

$$34_{as} = {}^0(2J + 5K)_o, \text{ in } 10-10.$$

Among these are our two edges 12 and 23 of B.

12. *Edge 34 of B.* This uncleared metapyramidal edge, 44_{as} , (18) reduces after deletion of its effaceable 15 to (8), which by the marginal charge 5_{oo} becomes (19) the pyramidal 44_{zo} in 7-7; and this by 5_{32} for 5_{oo} is made 44 in 10-9. In our tables we find 5_{32} thus:—

$$5^{mo} = 10; 5_{as} = 67, \text{ in } 9-8.$$

Each 5^{mo} has one zoned and two zoneless summits, which can take the place of the zoned 3 in (19), and each 5_{as} has five zoneless summits.

Hence we enter:—

$$44^z_o = {}^010_0^{5_{32}}, 44_{as} = 2 \cdot 10 + 5 \cdot 67 = {}^0355_0^{5_{32}} + \dots \text{ in } 10-9.$$

A replacement gives us:—

$$44_{zo} = {}^010_1^{5_{32}}; 44_{as} = {}^0355_1^{5_{32}} + \dots \text{ in } 10-10.$$

Our asymmetric 34 on B (18) is among the 355.

13. *Edges 45 and 41 on B.* These (20,22) reduce to (8), which marginally charged with 4_{oo} becomes (21), the pyramidal:—

$$34_{as} = {}^01_0^4 \text{ in } 6-6.$$

This will be made a metapyramidal 34_{as} by 4_{44} for 4_{oo} , and this 4_{44} is registered:—

$$4^{4ad} = 2; 4^2 = 6; 4^{ag} = 21; 4^{di} = 21; 4^{as} = 717, \text{ in } 9-9.$$

Here $4ad$ (for $4ag, di$) shews four zones, having two agonal and two diagonal traces in the zoned polar 4 , which has only one summit to place at 5 in (21). Each 4^2 has two, and its reflected image has two, to place there; each 4^{ag} and each 4^{di} has four, and each 4_{as} , with its reflected image, has eight summits, to occupy the 5. We enter:—

$$34_{as} = 2 + 4 (6 + 21 + 21) + 8 \cdot 717 = {}^05930_0^{4_{44}} + \dots \text{ in } 10-10.$$

Our edges 45 and 41 in B (20, 22) are among these 5930.

14. *Edge 56 in B.* This cleared edge 44_{as} , (23),

reduces to (8), which charged with 5_{00} is 44_{z_0} in 7-7 (19) pyramidal, and this by 5_{33} for 5_{00} becomes the group in which is our edge 56. We find 5_{33} thus registered:—

$$5^{m_0} = 22; 5_{as} = 215, \text{ in } 9-9;$$

whence we enter the metapyramidal:—

$$44_{z_0} = {}^0_1 22^{5_{33}}; 44_{as} = 2 \cdot 22 + 5 \cdot 215 = {}^0_1 1119^{5_{33}} + \dots \text{ in } 10-10,$$

Our edge 56 is one of the 1119: thus we have studied B.

15. *The autopolar C.* This is made by crowning with a hexace a 3-zoned propyramidal reticulation, so as to destroy the zones and to keep the 3-ple repetition. The polar summit of C is thus registered:—

$$6^3 49_{g.o.ed} = {}^3_0 1_0 \text{ in } 10-10.$$

We have to examine its six edges 45, 42, 43, 23, 13, 12.

Edge 45 on C. This (24) reduces to the cleared (25), and then to the second of the propyramidal, (26, 27), which are registered thus:—

$$45_{ep} = {}^4_0 1_0; \text{ and } 45_{as} = {}^4_0 1_0; \text{ in } 7-7.$$

Either of these charged with $3_{00} 3_{00}$ on margin and diagonal becomes one of the cleared nine:—

$$46_{as} = 3 \cdot 3 = {}^2_0 9^{33}_m + \dots \text{ in } 10-9;$$

one charge being shewn by m to be marginal. For we can charge any one of three triangles (26, 27), and next any one of three diagonals. We see in this, when entering replacements, that we have the choice of any one of three deletes to replace by an effaceable, and we enter:—

$$46_{as} = {}^2_2 27^{33}_m \dots \text{ in } 10-10.$$

One of these 27 is our edge 45 on C, (24).

16. *Edge 42 on C.* This (28) reduces to (8), which by a marginal 6_{00} becomes (29), the pyramidal

$$36_{as} = {}^1_0 1_0^6 \text{ in } 8-8.$$

This by 6_{22} for 6_{00} becomes metapyramidal in 10-10.

We find 6_{22} thus registered:—

$$6^3 = 2; 6^{ag} = 6; 6^{di} = 6; 6_{as} = 30, \text{ in } 9-9.$$

To occupy 2 in the zoneless (29), 6^2 and its image have

each three summits; 6^{as} and 6^{di} each have six; and 6_{as} and its image each have six. Hence we register:—

$$36_{as} = 2 \cdot 2 \cdot 3 + 6 \cdot (6 + 6 + 60) = {}^0_1 44 {}^{6_{22}}_0 + \dots \text{ in } 10-10.$$

Our edge 42 (28) is one of these 444.

17. *Edge 43 on C.* This uncleared edge (30) reduces to (8), which by 3_{00} , becomes (31), the pyramidal

$$34_{ep} = {}^0_2 1^3_0 \dots \text{ in } 6-5.$$

We make this 10-9 by 3_{44} , which we find:—

$$3^{mo} = 17; 3_{as} = 137, \text{ in } 8-8.$$

from which, as (31) is zoned, we enter:—

$$34_{ep} = 17; 34_{as} = 17 + 3 \cdot 137 = {}^0_2 428^{8_{44}}_0 + \dots \text{ in } 10-9,$$

whence (art. 9), by a replacement,

$$34_{as} = 17 + 2 \cdot 428 = {}^0_1 873^{8_{44}}_1 + \dots \text{ in } 10-10,$$

among which 873 is our edge 43, (30).

18. *Edges 23, 13, 12 on C.* The first (32) is one of the 4094 of art. 7.

The next, 13, (34) reduces to (4), which, marginally charged with 3_{00} , becomes (33)

$$34_{as} = {}^1_1 1^3_0, \text{ in } 6-6.$$

By 3_{44} for 3_{00} , this is made an edge of 10-10, and by the preceding art. 17, we register (34):—

$$34_{as} = 3 \cdot 17 + 6 \cdot 137 = {}^1_1 873^{8_{44}}_0, \text{ in } 10-10.$$

The edge 12 is a diagonal drawn (35) in a 5-gon of 10-9, and is one of the 34_{as} in art 11.

We have thoroughly discussed the solids A, B, and C.

19. *The autopolar contrajanal anaxine D.* All contrajanal anaxine solids, autopolar or not, have neither zonal trace, nor axis of repetition; and every feature, face, summit, or edge, is diametrically opposite to a like feature, whose configuration is the reflected image of the former.

Thus in D, in 10-10, the edge 04 supposed above the paper, is opposite to the edge 98 below it; so that if you walk from the pentace 0 to the tessarace 4, you have a 5-gon on the right; but if you conceive yourself walking on the

opposite surface of the solid from the pentace 9 to the tessarace 8, you have a 5-gon on the left. To see this, hold the paper up to the light, and read through it from 9 to 8. The edges 04 and 98 are a *contrajanal anaxine pair*, or, briefly, a *janal anaxine pair*, and either is a *janal anaxine edge*. Such edges form *janal anaxine summits* and *faces*. Every single edge of the P-Q is infallibly registered by our methods, either alone, if there is but one such, or in a group, well defined and conceived, and soon vast in number, of edges mastered by one glance and one entry. But in these entries of the edges there is nothing to determine whether one or more of the group is or is not an edge upon a *contrajanal anaxine solid*. It becomes necessary to construct all *janal anaxine pairs*, symmetric or not, one edge above, the other below, the paper, both at one glance.

The edges of D are nine, 04, 06, 07, 08, 01, 12, 23, 34, 45. We shall construct each as a single edge, and construct also the nine *contrajanal pairs*.

20. *Edge 04 of D.* The single asymmetric edge 04 (D), having neither delete nor effaceable, is a diagonal 45_{as} drawn in a 7-gon in 10-9. Our tables of 10-9 give

$$7^{mo} = A, 7_{as} = B, \text{ in } 10-9.$$

Each 7^{mo} has one epizonal and three asymmetric edges, and each 7_{as} has seven asymmetric.

We register the diagonals 45, each parallel to a different edge of the heptagon, thus:—

$$45^{mo} = {}^0A_0; 45_{as} = {}^0(3A + 7B +)_0, \dots \text{ in } 10-10.$$

One of the latter is the edge 04.

To see the *janal pair* 04, 98, consider (36) from which the pair is removed, and in which the identical wedge-edges 61, 52 are indicated undrawn in the plane of the paper, though not found on D. The summits 7, 8, 9, of the inner contour, are below the paper. It is evident that these 61, 52, are the same edge, 34_{ep} , of the pyramid 5-5, (4). If we turn 52

through two right angles, so that 2 and 5 change places, we bring 9 into the upper contour, and get (37), in which the edge 61 stands opposite to its mirrored image. That is, (36), before the edges 61 and 52 are erased, is an edge 34_{ep} standing opposite to its mirrored image, after the image has been turned through two right angles, by changing the places of 5 and 2.

The lines 65 and 12, afterwards drawn, may be of any length, or null, as in (38). By crowning the upper contour of (36) with 04 (or 03), and the lower with its diametrically opposite 98 (or 97), we construct the janal anaxine pair 04, 98, (39); which is entered in our janal tables:—

$$45_{ja.an} = {}^0_0 1^{8403} + \dots \text{ in } 10-10.$$

Where 0 and 3 are the numbers of summits and faces not about the edge 34 , but below it. The edge 34_{ep} is $34 \cdot 0 \cdot 3$, (art. 1).

We know by *ja.an.* (=janal anaxine) that we have recorded a contrajanal pair of asymmetric edges, (39).

If we so janally crowned (38), we should get a pair

$$34_{ja.an} = {}^0_0 1^{8403} \text{ in } 8-10,$$

which is a janal anaxine pair not found on a contrajanal anaxine, but upon a symmetrical janal solid, a 2-ple monoxone monaxine, in 8-10.

We know the symmetrical janal solids by their symmetrical faces, summits, and edges; and we know by their signatures, how many janal anaxine pairs are found on them all. Subtracting these from our total of janal anaxine pairs, we have remaining the number of such pairs upon the contrajanal anaxine solids, and hence the number of these solids.

The figures (36) and (38) are *contrajanal subnuclei*, made with an epizonal edge 34_{ep} . The reader will convince himself without difficulty of the truth of the following theorem.

Theorem. If any non-polar edge e , zonal, epizonal, or asymmetric of any polyhedron be made to stand, as before a mirror at right angles to the paper, opposite to its image e' , and if e' be then turned through two right angles, so that the ends of e' shall change places, there will be after connexion, as in (37), of the ends of e and e' , equal and similar contours, above and below the paper: in (36), 065432 and 921876. If in these contours of the subnucleus be drawn any diagonals $a\ b$ and $a'\ b'$, so that a and a' , and also b and b' , are diametrically opposites, $a\ b$ and $a'\ b'$, if non-polar and zoneless, will be a contrajanal anaxine pair.

Thus, every entire group of edges, **AA** or **AB**, of one symmetry, or all asymmetric, all summed in one complete entry, will come to be handled at once in a group of subnuclei, for the drawing and registering in groups of janal anaxine edges in higher P-Q. Every edge that we construct, whatever be its signatures being a single 'edge, will be so used with its inverted image.

For another example of the above theorem, let e be 35_{as} in 10-10. Of these, we have found 2260 in art. 8, 612 in art. 9, and other 612 in art. 10; so that,

$$35_{as} = 2260 + 1224 + \dots = M \text{ in } 10-10,$$

where M will be a much greater number than 3484.

With each of these M edges we can form a subnucleus like (38) or (36); and, as the edge 34_{ep} in 5-5 gave us $34_{jan.}$ and $45_{ja.an.}$ in 8-10 and 10-10, even so, we can enter at once from 35_{as} in 10-10, getting both 35 and 53,

$$35_{ja.an.} = {}^0_2 M_0^{35'4'8},$$

$$44_{ja.an.} = {}^0_0 M_0^{35'4'8}, \text{ both in } 18-20;$$

$$\text{and } 46_{ja.an.} = {}^0_2 M_0^{35'4'8},$$

$$55_{ja.an.} = {}^0_0 M_0^{35'4'8}, \text{ both in } 20-20.$$

These can be all made propyramidal $ja.an.$ edges having diagonals and marginal triangles which can be charged. *Vide* art. 27, 28.

21. *Edges 07 and 06 on D.* The former (41) is one of the 4094 in art. 7.

The latter (40) is one of the 5930 of art. 13. We see the *janal pair* 07, 93, each 33_{as} , in (43). The pair being removed, the broken lines 678 and 234 become 68 and 24. Here 8921 are below the paper.

The *janal pair* 06, 92, each 34_{as} , are seen in (42); and on their removal 765 and 123 become 75 and 13.

The *nucleus* remaining in both cases is the zoned triaxine (44) in 8-8, in which 8921 are below.

Some solids of *janal* symmetry have, and some have not, *contrajanal* anaxine pairs of edges. Every face of the former solids gives a *nucleus*, on which *contrajanal* reticulations can be constructed, to be crowned with *janal* anaxine pairs.

Every *objanal* monozone face, and every *janal* anaxine face, is a face of a nucleus, in which and its opposite if it is >3 , *janal* anaxine or *objanal* monozone pairs can be drawn. The monozone 4-gon of this zoned triaxine (44), on which the four 4-gons are all alike, is

$$4_{obj}^{ag}47=1, \dots \text{ in } 8-8,$$

where *obj.* = *objanal*, the character of every monozone feature in a 2m-ly repeating zone. The three zones of every zoned triaxine are all repeating, because the plane of each zone is perpendicular to a two-zoned *janal* axis, which must be of double repetition. This 4^{ag} is entered correctly with the zonal signature ($Z = \dots 4, 0^4$) in page 356 *Proceedings* of the Royal Society, January, 1863. It ought to have been a second time registered there, as above, as an *objanal* monozone 4^{ag} . And the last 3^{mo} in that page, 356, should have been registered a second time as *objanal* monozone. The reason of this is, that not all monozones, but only the *objanal* ones, are nuclei for *contrajanal* constructions.

In (43) one pair of opposite edges of the nucleus (44) were charged with plane triangles whose bases became

deletes of the crowning edges through 0 and 9. In (43) another pair of opposites were so treated.

These pairs 07, 93 and 06, 92 are thus entered :

$$33_{ja\ an} = {}^0_2 1_0^{447}, \dots \text{ in } 10-10$$

$$34_{ja,\ an} = {}^0_2 1_0^{447} \quad ,,$$

where 447 is the solid nucleus.

22. *Edge 08 on D.* This as a single edge is the diagonal of a 4-gon in 10-9, as in art. 6. *The pair 08, 94, each 33_{as}, are seen in (45).* Their removal must lay bare two like 4-gons, in a 10-8, which are the same janal anaxine 4-gon. This appears in our table as the only one,

$$4_{ja,\ an} 67 = 1, \dots \text{ in } 10-8;$$

whence, as its diagonals are different,

$$33_{ja,\ an} = {}^0_2 2_0, \dots \text{ in } 10-10.$$

The $4_{ja,\ an}$ has in its solid a like face opposite, in which the same diagonals can be drawn. One of the above pairs of $33_{ja,\ an}$ completes our autopolar D; the other pair completes a monozone in 10-10, which is not an autopolar, but has janal anaxine edges. If there had been in 10-8 A janal anaxine 4-gons instead of one, our entry would have been ${}^0_2 A_0$ instead of ${}^0_2 2_0$.

23. *Edge 10 on D.* This single edge 35_{as} is one of the 2260 of art. 8.

We see *the janal pair 10, 95 in (46).* Removing the pair, 654 becomes 64, and 812 becomes 82, making of (46) the subnucleus (38), art. 20. The opposite edges 64 and 81 in (38) being charged with triangles, their bases become deletes of the crowning edges 35_{as} in (46); and we enter:—

$$35_{ja,\ an} = {}^0_2 1_0^{34\cdot03} + \dots \text{ in } 10-10;$$

the affix $34\cdot03$ denoting the subnucleus.

24. *Edge 12 on D.* This single edge 45_{as} (47) reduces finally by deletion of the effaceables 08 and 49 to (4), which

charged on a diagonal with 4_{00} becomes the pyramidal (50), which is :—

$$45_{as} = {}^1_2 1_0^4 \dots \text{in } 8-7.$$

This by 4_{21} for 4_{00} is made a metapyramidal 45_{as} in 10-8. We find 4_{21} in our tables thus—

$$4^{ag} = 2; 4^{di} = 2; 4_{as} = 9; \dots \text{in } 7-8,$$

whence

$$45_{as} = 4(2 + 2) + 8 \cdot 9 = {}^1_2 8_0^4 {}^{4}_{21} \text{ in } 10-8.$$

By two replacements we get :—

$$45_{as} = {}^1_0 8_2^4 {}^{4}_{21}, \text{ in } 10-10.$$

Our single edge 12 in D, having the effaceables 80 and 49, is one of these.

We see in (47) a janal anaxine pair 12, 65 in 10-8, in which putting 9' and 8' for 0 and 4, 89' and 98' are deletes both of 12 and of 65. The summits 898'9' are in the paper, 123 are above it, and 657 are below it. A section through 898'9' removes the upper half of the solid: this is (48), in which 12 is above the paper. The lower half is what the image of (48) in the mirror 898'9' becomes, when it has been rotated through two right angles, so that the edges 89 and 9'8' of that image have changed places. In (48) let 89 and 8'9' vanish, and let 89' and 98' unite into a diagonal 89. The figure is now (4), having 8 for 5 at the vertex, and 93 for base, instead of 89.

This gives the construction of (47). We place (4) so figured upon a mirror, touching it only along that diagonal 89 of the edge 12; we hold it by 12 so, while our fairy friend Alice on the other side revolves the image through two right angles, so that 8 and 9 change places. This image and (4) make no polyedron, because there is a linear section along 89; but if we give this edge a breadth, however small, making it a 4-gon whose sides in the contour are 89 above and 9'8' below, its other sides being deletes in the paper, we

have the solid (47). The cleared janal anaxine pair 12, 65, of (47) is entered thus :—

$$45_{ja,an} = {}^2_2 1^0_0 \dots \text{in } 10-8,$$

a pair not on a contrajanal anaxine solid, but on the 2-ple monaxine monozone (49) identical with (47).

Two replacements of an opposite pair which destroy the zone in (49), give us :—

$$45_{ja,an} = {}^2_0 1^0_2 \dots \text{in } 10-10,$$

our pair 12,65 in D, putting 9' for 0, and 8' for 4 in D.

In (4) 58 is a zonal edge of the 4-zoned pyramid 5-5; but if we make it the quadrilateral 55'88' by introducing the edges 55' and 88' into the contour, all symmetry disappears. The above treatment of the diagonal 58 in (4) is different from the operation in art. 20, which has to be performed on 58 as 33.1.3.

We have to treat every diagonal and every delete of every cleared single edge **AB** propyramidal pyramidal or metapyramidal, exactly as we have in (47) treated the diagonal 58 of the edge 12 in (4). We never construct contrajanal anaxine summits.

25. The above is the first application of a principle that founds the former of the two theorems following.

Theorem. If the entry:—

$$\mathbf{AB}_{as} = {}^a_d C_0 + {}^a_e D_0 + \dots \text{in } P-Q,$$

shews the entire number of cleared edges **AB**_{as} which have all $a > 0$ different diagonals, namely C which have d deletes, D which have e deletes, &c., no matter what be the right upper affix, we can register :—

$$(\mathbf{A} + 1)(\mathbf{B} + 1)_{ja,an} = a \{ {}^{2a-2}_{2.1+2} C_0 + {}^{2a-2}_{2.0+2} D_0 + \dots \} \text{in } 2P-2(Q-1).$$

This is the contrajanal process of *doubled diagonal*.

In the **AB**_{as} of this theorem, whether **B** be equal or

unequal to **A**, the a diagonals are all different, as are the a deletes of the following.

Theorem. If the entry :—

$$\mathbf{AB}_{as} = {}^d_a C_0 + {}^e_a D_0 + \dots \text{ in } \mathbf{P-Q},$$

shews the number of cleared edges **AB** in **P-Q** which have all a different > 0 deletes, namely, C having d diagonals, D having e diagonals, &c., no matter whether they be pyramidal or metapyramidal edges, we can register at once :—

$$\mathbf{A+1} \ (\mathbf{B+1})_{ja-an} = a \{ {}^{2d}_{2a} C_0 + {}^{2e}_{2a} D_0 + \dots \} \text{ in } 2\mathbf{P-2Q}.$$

This is the contrajanal process of *doubled delete*.

The edge in (4) is $34_{ep} = {}^2_0 1_0$, whose two diagonals are not different. It is not required here to modify the above theorems for the cases of symmetric edges **AA** or **AB**. The student will do that.

All janal anaxine pairs are constructed, at first cleared, either on a subnucleus, or on a nucleus, or by the process of doubled diagonal or delete, except those pairs which are diagonals drawn in opposite faces of a solid that has janal-anaxine faces, so as to be opposite diagonals. And we readily obtain every entry that we require to make, from simple inspection of our previous tables. Everything that comparison of the figured solids could give us is read with greater order and accuracy, in comparing previous entries by the rules of our method.

We shall often inspect these entries of cleared edges, obtained by the above two theorems, when registering janal-anaxine edges in still higher tables ; never for imposition or change of charges, but only for *contrajanal replacements*, which must be made by n janal-anaxine pairs of effaceables, adding $2n$ faces. The last entry above in $2\mathbf{P-2Q}$ shews edges having all a pairs of deletes, and our entry for $2n$ replacements from a glance at it will be of the uncleared edges :—

$$(A + 1)(B + 1)_{ja.an} = \frac{a\Pi a}{\Pi n \Pi(a-n)} \left\{ {}^{2d}_{2[a-n]}C_{2n} + {}^{2e}_{2[a-n]}D_{2n} + \dots \right\}$$

in $2P-2(Q+n)$.

Here, and in the two theorems above given, there is no further use of a right upper affix. We never look a second time at uncleared edges in any of our devices of construction. If we are making pyramidal, we build only on pro-pyramidal; and if metapyramidal, then only on clear pyramidal, disregarding all entries that have in any right upper affix a single charge A_{ab} where a and b are not both zeros.

For examples of the above two theorems I take two diagonals 32 and 12, and two deletes 71 and 81, all of (25). In (59), which is (60), we see the janal pair, 45 above and 45 below the paper, in which the doubled 32 23 only are in the paper, connected by darker deletes. Every summit above the plane 3232 carries the same number with its contrajanal opposite, below that plane. In (61), which is (62), the same use is made of the doubled 12. In both (59) and (61) the single 64_{as} of (25) in 10-9 has become $75_{ja.an}$ in 20-16. These as single edges 75_{as} are metapyramidal in a group ${}_5A_0{}^3m{}^{3475}$, in 20-16.

In (63) and (65) which are (64) and (66) the edge 64_{as} of (25) in 10-9 has become $75_{ja.an}$ in 20-18. As single edges 75_{as} , they are part of a group ${}_4B_0{}^3m{}^{3476}$, in 20-18. One is made by a doubly charged margin, and the other by a doubly charged diagonal; *vide* art. 29; and all the four single edges 75_{as} reduce to (27). ${}_4B$ carrying $3_{00}3_{00}4_{76}$ will be only one term of the large number of these cleared 75_{as} in 20-18. The others will be like terms carrying $3_{ab}3_{cd}4_{ef}$, $3_{ab}4_{ef}3_{cd}$ and $4_{ef}3_{ab}3_{cd}$, where every solution of $a+b+c=7$ and $b+d+f=6$, will be employed. But inspection of preceding tables easily gives the sum of these 75_{as} having two diagonals and four deletes, or of the ${}_2A_0$ having five deletes.

These 60, 62, 64, 66 are contrajanal anaxine solids. A like use of every different diagonal or delete under our cleared edges will be accounted for and summed up in our entries in higher tables of janal anaxine edges.

26. *Edge 23 on D.* The single uncleared 23, (53), is a 35_{as} of the 612 of art. 9.

The *janal anaxine pair* 23, 76, are seen in (53), which reduces to the subnucleus (51). This, charged with triangles on the pair 19, 05, and on the pair 49, 08, becomes the cleared (52), which is registered:—

$$35_{ep.obj.} = {}^0_4 1_0^{33\ 0\ 2}, \dots \text{ in } 10-8.$$

Here obj. stands for objanal, which designates the symmetry of the zoned features of an evenly repeating zone to which an axis of 2-ple repetition is perpendicular. Such an axis passes through the centres of the 2-ple polar edges 18 and 45 in (49), a 2-ple monaxine monozone having a repeating zone.

The four deletes in (52) are alike, and it matters not by which pair of opposites we spoil symmetry. We enter (53):—

$$35_{ja.an} = {}^0_2 1_2^{33\ 0\ 2}, \dots \text{ in } 10-10.$$

27. *Edge 34 on D.* This single cleared 35_{as} (54) is one of the 612 of art. 10.

The *janal anaxine pair* 34, 87 is seen in (55), which reduces to the subnucleus (51), made with the edge $33_{zo} \cdot 0\ 2$ in 4-4. The edges 19 and 50 in (51) have been in (55) charged with (4) uncrowned, the charge losing a marginal triangle. It is best thus to conceive the imposition of a propyramidal uncrowned reticulation upon a solid edge like 19 in (55) and (51).

We register this contrajanal propyramidal pair (55) thus:—

$$35_{ja.an} = {}^2_2 1_0^{33\ 0\ 2} \text{ in } 10-10.$$

All cleared janal anaxine edges made on nuclei or on subnuclei are propyramidals so long as their deletes are all

edges of the nucleus or subnucleus. If they have pairs of diagonals, as the $35_{ja.an}$ just found has one pair, they may become pyramidals by charges on either diagonals or marginal triangles; and may afterwards become metapyramidals, exactly as simple edges do, provided that the imposed charges preserve the contrajanal configuration. Those charges will be written in the right upper affix after the nucleus or subnucleus.

28. *The edge 45 of D.* This single edge (56) is one of the 5930 of art. 13.

The *contrajanal pair* 45, 81 are seen in (57) which reduces to the subnucleus (58), made with the zonal edge $33_{zo} \cdot 1 \cdot 3$, (4), in 5-5: this (58), charged on opposite pairs 60, 92, or 69, 20 by (8) uncrowned as just explained of (4), and janally crowned, gives us one of

$$34_{ja.an} = {}^{02}_{20}{}^{88 \cdot 13}, \dots \text{ in } 10-10.$$

One makes D(57); the other completes a contrajanal anaxine solid not autopolar, which has pentaces but no pentagon. We have now completed our study of the four autopolars A, B, C, D.

29. We have no examples in the four solids discussed of multiple charges or the same margin or diagonal. But we frequently in analysis find imposed, or have in construction to impose, an agglutination of pyramidal bases $A_{00} B_{00} C_{00}$...whose vertices hang downwards, instead of a single one. If the charge is $A_{00} B_{00}$, they cohere by a common deleted edge; if $A_{00} B_{00} C_{00}$, by two deleted edges.

The charge $A_{00} B_{00}$ on a diagonal registers three deletes; $A_{00} B_{00} C_{00}$ registers four; one delete fewer if the charge is marginal. We have to impose them so as to augment either the lower contour only, in the position $A_{00} B_{00} C_{00}$ or $B_{00} C_{00} A_{00}$, &c., making six positions if, A B and C are different pyramidal bases; or the upper contour only, or both, in every way possible. No figures are required. It is

all a simple problem of permutations. The cleared pyramidal edge so made becomes cleared metapyramidal, if for one or more bases A_{00} or B_{00} we substitute, exactly in the same posture, A_{kl} or B_{mn} .

30. What precedes supplies much of what the unprinted sections of my Memoir in the *Philosophical Transactions*, vol. clii, were about, as may be read at the end of my second section, to lay before the reader, and will enable the student to conceive how the *most* of the *data* required by the general theory are obtained, namely, the number and description of the *edges* of the sought P-Q to be extracted from the lower tables. Much greater is the difficulty in registering the *symmetric summits* of P-Q, as obtained by coronations and replacements; by reason of the variety of symmetries which arise in crowning with various symmetric summits the same symmetric reticulation; which arise also in turning a cleared symmetric pyramidal summit p into the possible number of symmetric metapyramidal summits p , whether janal, contrajanal, or neither, by substitutions as above handled for pyramidal bases whose charging edges are the deletes of p ; and which arise with nearly the same complexity in replacements symmetrical about p .

In my work presented to the Royal Society, and in the brief abstract of it in their *Proceedings*, May 30, 1861, I put *perfect* reticulations, summits and edges, *i.e.*, those which have no *deletes*, in the place occupied in the preceding pages by *cleared* summits, &c., *i.e.*, those which have no *effaceables*. It comes to the same thing, whether we make *replacements* under the *cleared* or *effacements* under the *perfect*. But it is better to work from inspection of tables below those of the sought P-Q, as we have been here working.

No cleared pyramidal edge e has under it a base A_{00} which has more than two edges among the deletes of e . But

a cleared symmetric pyramidal summit p of the $Q-P$ may easily have under it bases $A_{00} A_{00} \dots$ each of which has more than two edges among the deletes of p ; so that p cannot be imagined to become a propyramidal by the vanishing of its charges into diagonals of p , as in art. 4.

In studying this symmetric p , we have to uncrown, *i.e.*, to remove the p -ace; and the symmetrical pyramidal reticulation R so laid bare has to be constructed and registered with proper signatures, by inspection of which we can crown R by symmetrical summits in every possible way. The tabulation of these pyramidal R is one of the difficulties of the theory of the $Q-P$. These are all met and disposed of in my unprinted sections.

Of course this is useless theory for useless high values of P and Q . Any earnest student who is ambitious to construct merely all polyedra, say of from 30 to 40 edges, can easily draw the very few symmetrical reticulations R that are needed. By their coronation in every way of symmetry he will get all the symmetric summits of the $Q-P$, propyramidal, cleared pyramidal and metapyramidal, and those made by replacements, all the simple, janal, and contrajanal p -aces required, whose reciprocals are the symmetric p -gons of the $P-Q$.

With these faces and all the edges of the $P-Q$ he has everything necessary, and he can both describe and construct, without omission or repetition, every solid from what is now before him.

The number of propyramidal edges AB which have d diagonals is a given function of AB and d , whether symmetric or asymmetric. After registering these in $P-Q$, the cleared pyramidal are got from the propyramidal of preceding tables, and the cleared metapyramidal from preceding pyramidal. Next in $P-Q$ come the diagonals of the faces in $P-(Q-1)$; and, finally, the results of i replacements in the

cleared entries in $P-(Q-i)$, for all values of i . The rest is easy, as shewn fully in the complete 9-9 in our vol. xxxii.

Very few reticulations R are wanted, besides those crowned in preceding tables. Thus the symmetric solids A and C in 10-10 can easily be made pyramidal under the same symmetrical summits. The three diagonals 93, 46, 70, or the three 03, 36, 60 in A , can be imagined to expand into the bases $F_{00}F_{00}F_{00}$, in various postures, preserving the 3-ple repetition. If F_{00} is 4_{00} , the cleared polar triace of A would be registered $3^31318_{ged} = {}^e36_0^{444}$, in 19-16; and by 4_{mn} for 4_{00} these become a group of 3-ple metapyramidal poles, over $3m$ more summits and $3n$ more faces, all easily enumerated at once, from a glance at the $(5+m)-(5+n)$. Every face 4_{mn} would be imposed in a given number of postures.

The reader will understand that I have been analysing the solids A, B, C, D , not in order to show how they more than others were obtained, either as 10-edra or as autopolars, but because their edges, being few, supply useful examples for a detailed exposition of my methods.

I am convinced that the student who may be attracted by the problem, has it now in his power to give an account of all the $P-Q$ that will ever be asked for.

31. In my tables of 10-8, *Proceedings* of the Royal Society, January, 1863, page 368, is the entry:—

$$55^{2ad}26 = 2; Z = 4, 2, 0, 0^3; Z^1 = 2, 2, 0, 0.$$

One question is, how many monozone 5-gons in 10-8 have an edge epizonal in $Z = 4, 2, 0, 0^3$?

The two polar edges just written must be one of them epizonal in this Z : the other must be epizonal in Z^1 . The two 5-gons about each polar 55 are identical.

We read among the epizonal edges, on the same page, (53)_{ep}46 = 1, in $Z = 4, 2, 0, 0^3$. This makes, with the one polar 55 above named, two 5-gons, whose zone is this Z .

On page 367, we see entered, $5^m 57 = 2$, $Z = 4, 2, 0^3$, which is impossible; for no 5-gon can be in a zone which has no epizonal. There is an error here, of which the correction is $5_m 57 = 2$, $Z = 4, 2, 0, 0^3$.

Another question is, how many monozone 5-gons in 10-8 have the zone $Z^1 = 2, 2, 0, 0$?

One has for its epizonal edge the other polar 55 above named.

Amongst the epizonals we read,

$$57_{ep} = 2, \text{ and } 55_{ep} = 1, \text{ in } Z^1 = 2200,$$

which, as the two 5-gons on 55_{ep} are different (otherwise it would be a polar edge 55) gives us four more 5-gons having this zone 2, 2, 0, 0. There should, therefore, be found on page 367:—

$$5^m 57 = 5, Z = 2, 2, 0, 0.$$

But there is no such entry; this then is a second omission requiring correction on page 367. These 5-gons are given one by one zoned polar 55; two by one epizonal 55; and two by two epizonals 57, all epizonals in 2, 2, 0, 0.

32. In my Memoir, *Philosophical Transactions*, vol. clii, part i, page 163, where the question in art. xlvii is—How many monozone A-gons in the P-edra Q-acra have the zone Z?—I have omitted in the sixth line to include in the value of $h_{A(Z)}$ the polar edges AA epizonal in Z, which are registered under the number a' , in art. xxxv. Of these a' , a'' will be epizonal in Z, and $a' - a''$ epizonal in Z_1 . There is required in the value of $h_{A(Z)}$ this number a'' from xxxv, and the section xlvii is fully corrected by writing its sixth line thus:

$$a'' + 2h_{AA} + h_{AB} + h_{AC} + \dots = h_{A(Z)},$$

where a'' is the entire number of A-gons epizonal in Z on polar edges AA. The omission of a'' was an oversight, such as would be the neglect of the above zoned polar edge 55.

Another little oversight requires correction in the same Memoir, in the *Philosophical Transactions*, page 144, art.

xxviii, line 6. After the *2m-zoned monarchaxine* has *janal anaxine* pairs, add *and so has the zoned triaxine*. The latter is what the former becomes when $m = 1$.

33. I trust that the mathematician who does me the honour to study the preceding pages will not complain that they are intolerably obscure and difficult, considering that this Thibet of Geometry has for centuries been found so difficult of approach.

Between thirty and forty years ago, I set myself a task of greed and cruelty, to be followed soon after by a task of packing; the first, single-handed to sack thoroughly the rich, wide, and unexplored province of the Polyedra; the second, to get my plunder of this complete theory safely into the *Philosophical Transactions*.

The Memoir on the theory of the Polyedra which I had the honour to present in 1861 to the Royal Society, and of which an Abstract appeared in their *Proceedings*, May 30, 1861, was theory without applications, and condensed as far as scientific rigour permitted. A huge mass of applications in full detail was then already prepared for presentation. If, in order to introduce to the reader's near acquaintance four little 10-edra, I have had to write all these pages, and to draw seventy figures, what chance had I, an obscure country clergyman, of getting the whole of my complicated work into the crowded pages of the *Philosophical Transactions*, as "Reading made easy," like this analysis?

The distinguished mathematicians to whom the Council of the Royal Society referred my Memoir recommended that my First Section only should be printed. This contains the necessary general theorems about Polyedral Symmetry, and the empty skeleton tables, which have, as the work goes on, to be filled up; but it contains not a line of my methods, either for finding the entries required, or for using them when completed. The referees informed me that they had

not read six of my pages : they were unreadable. I had in vain offered to attend and to assist in any way in the reading, and to listen to their advice.

Why had I sent all that to London ? It ought to have gone, I was told, to Paris, to the grand competition that was approaching there on this subject, of which full three years' notice had been given to all the world—and given in vain, although Imperial Science had only asked, and straightway asked again for one year more in vain, for some slice, "*quelque point important*," of this theory.

It was no slice that I had the honour to present to the Royal Society, but the whole animal, trussed and cooked to the best of my rustic ability. Was it my fault that the creature had gristles and bones ?

The Council, however, whose previous favours to me I here most gratefully acknowledge, kindly granted my earnest request that my first two sections might be printed. They were printed, and I was content. I had gained what I was most anxious to secure. The mistake was now impossible of assigning to the wrong owner any of my devices and leading theorems. I care not how soon or how long the Theory of the Polyedra is equally useless and forgotten. About this I shall never, either here or in any other planet, be heard singing the consoling ditty, "*Sic vos non vobis*."

Very fortunate was I to succeed in placing on record in the *Proceedings of the Royal Society*, 1863, a considerable amount of numerical results ; for I myself afterwards heard in the high places of Science no little displeasure expressed at their appearance there. I heard one speaker of renown say that if he could have prevented it, those tables of results would not have been admitted into the *Proceedings*. The only reason that I heard assigned, and I did hear that, was that they have too much the air of a memoir. A memoir

they are not: for of all those hundreds of propositions of geometrical truths unknown before, not one is proved there. The needed complete demonstrations, even of the 7-edra so far as I am aware, have yet to see the light. And now they cannot appear until they are enough wanted to set at work some young son of Science to prove or disprove my enumerations. He will do this with ease at the proper time, from what he will find before him in London and Liverpool of two practicable methods; or he may invent a better. It is very likely that in doing this, he will be glad to have the help of this fragment.

This, and immensely more that was prepared in similar detail, might easily have been presented long ago. But I have never been asked for even thus much, and I have not been in haste to throw away money in printing. It is now too late. I have felt that the Royal Society have been wise in waiting for an easier and more elegant solution of this entire problem by some more skilful hand; and I, too, have been wise enough about the whole matter, to wait in my corner along with them in perfect "peace" for more than twice "ten years."

Nobody is in a hurry for another century or two. In no tongue have I ever seen or received an intimation that any geometer has read three pages of what I have written on this subject, except one from the late Professor De Morgan. In his letter, which is now before me, written in 1862, without a word of complaint that my pages are unreadable, he informs me with thanks that he has read the printed papers which I had sent to him, and sees that my excessively complicated task has been conquered.

The two theories of Groups and of Polyedra were made famous for ever, early in 1858, by the Imperial Institute of France, when they hung out *Urbi et Orbi* two dazzling medals, as prizes for competitions on these subjects in 1860

and 1861. For more than two years the twin stars shone brilliantly together :

Sic fratres Helenæ, lucida sidera,

were of old the glory both of Paris and of Troy.

It came to pass in 1860 (vide *Comptes Rendus*, Mars, 1861) that one star was suddenly extinguished ; the other being, like

“The last rose of summer, left blooming alone,
Its lovely companion faded and gone.”

Again, for above two years, the brave survivor tried hard to make a decent bloom of it ; but at last, feebly and more feebly, it glittered itself out. (*Vide C. R.*, 1862–63.)

Touching groups I may be permitted to remark that in the *Proceedings* of the Literary and Philosophical Society of Manchester, vol. iii, pp. 133 and 161, 1864, and vol. iv, p. 172, 1865, there is a copious abstract of a more complete treatise than the one in the better known *Memoirs* of that society, vol. i, ser. 3, 1862. In that abstract are given the titles of the 135 non-equivalent transitive groups that can be made with fewer than eleven elements. Here are the titles of two, made with eight elements :—

$$8 \cdot 4 = 1 + 12_{44} + 13_{2223} + 6_{221111} ; Q = 105 :$$

$$8 \cdot 4 = 1 + 12_{44} + 13_{2223} + 6_{221111} ; Q = 630.$$

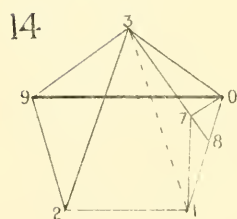
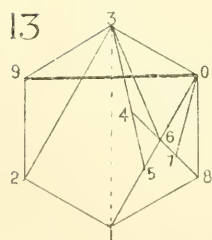
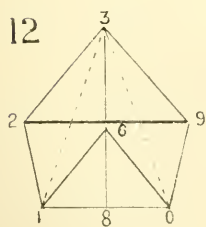
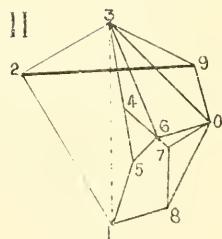
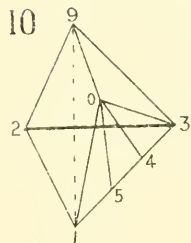
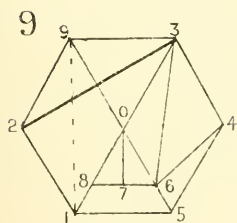
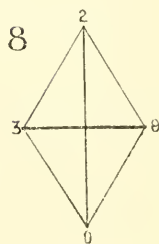
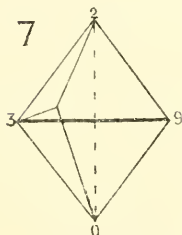
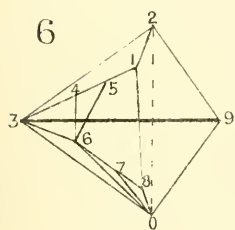
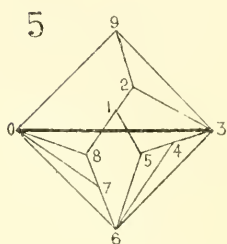
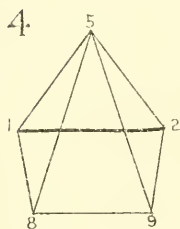
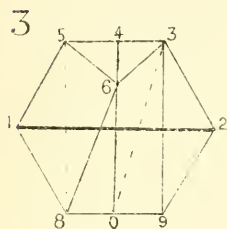
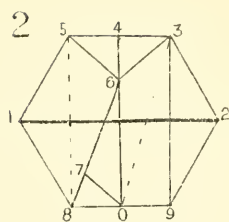
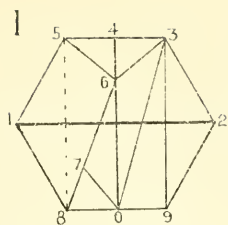
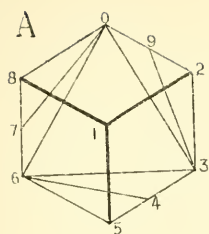
Both have 12 substitutions having each two circles of four elements ; and both have 19 square roots of unity, viz., 6 with four undisturbed elements, and 13 with none. The groups differ in the numbers *Q* of their distinct equivalents, each beginning with unity. Both groups are written out at page 80 of vol. xxxviii of the *Mathematical Reprint* of the *Educational Times*, Hodgson and Son, London, 1883.

To me it appears that the leading questions in the theory of groups are two : 1, How many really different transitive

groups can be made with n elements?—and 2, How are these to be written down with their analysis, and with their proved number Q of equivalents? Answers to these questions as to the above two groups are given at the page 80 above quoted, as they are found in the treatise about all the 135 groups enumerated and described. That treatise has somehow disappeared from the archives of the Society; but the abstract in their *Proceedings* places on record enough for my purpose.

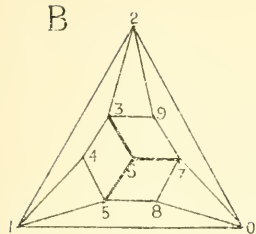
Is not that a complete theory of groups which fully answers these two questions up to $n=10$, and which shews tactically how they may be answered for higher values of n ?



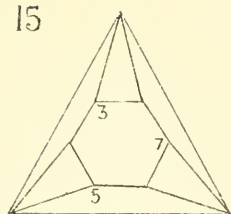




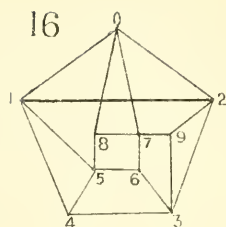
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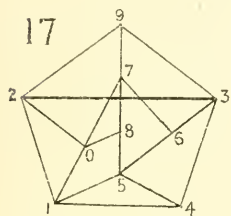
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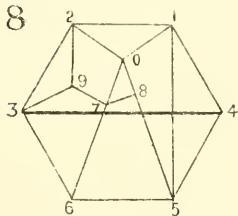
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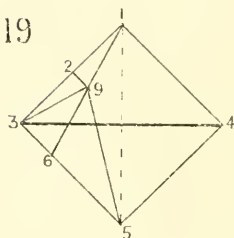
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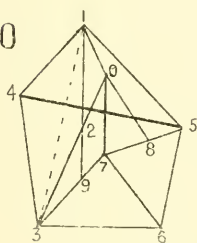
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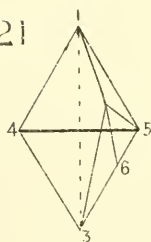
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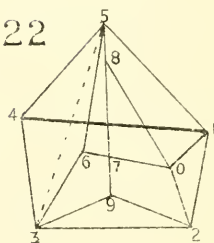
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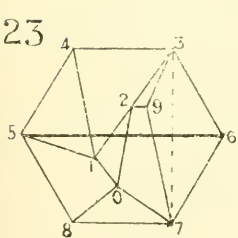
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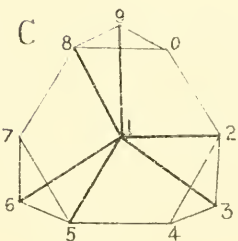
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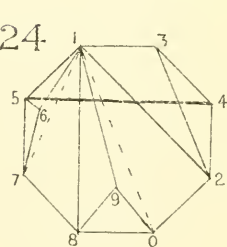
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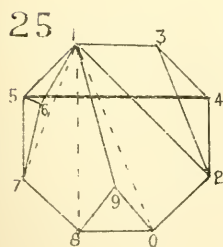
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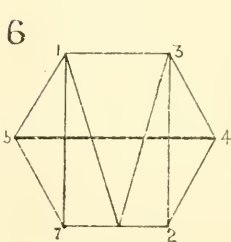
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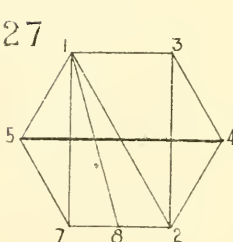
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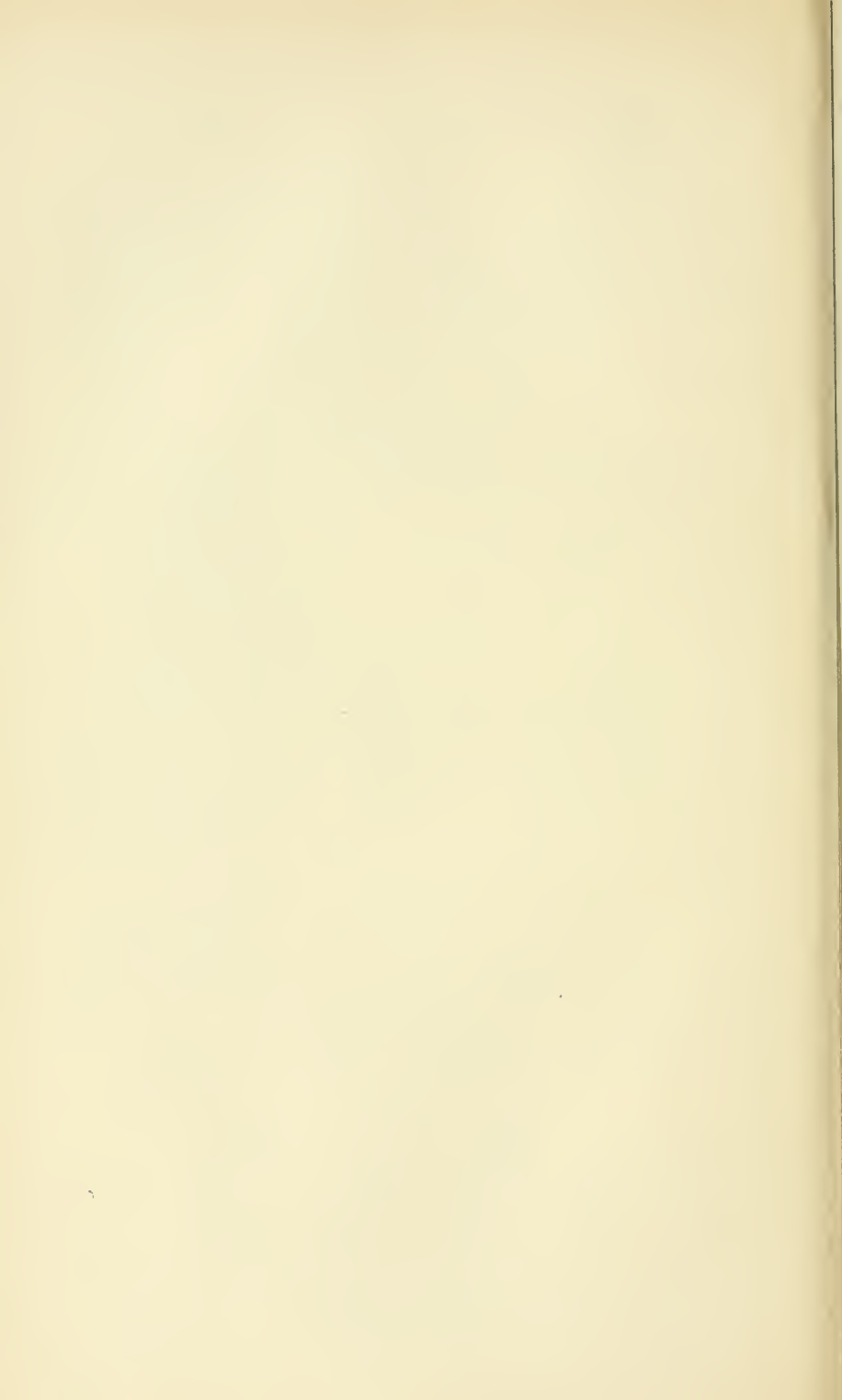


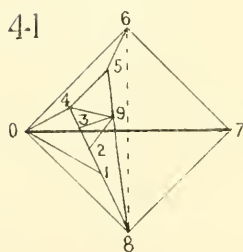
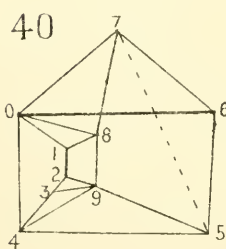
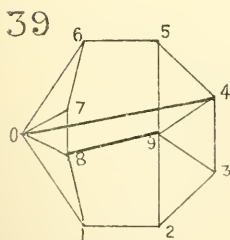
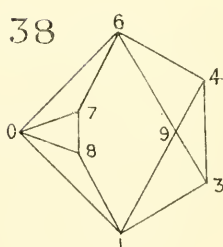
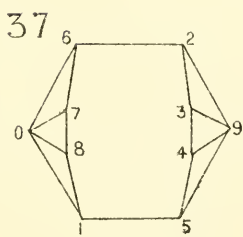
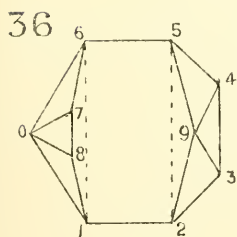
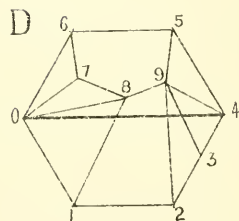
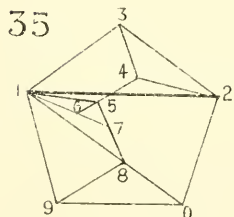
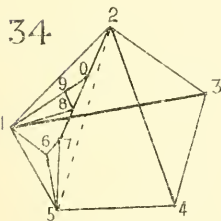
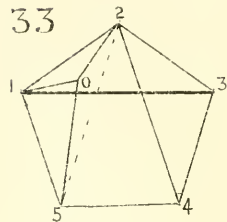
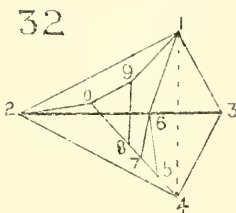
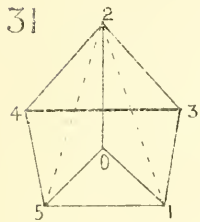
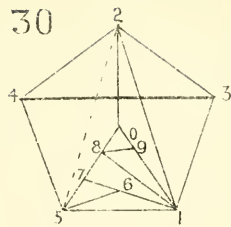
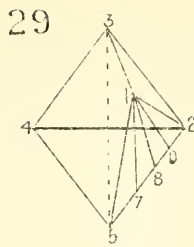
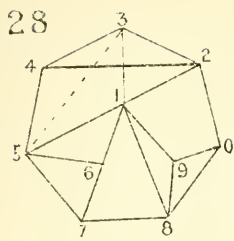
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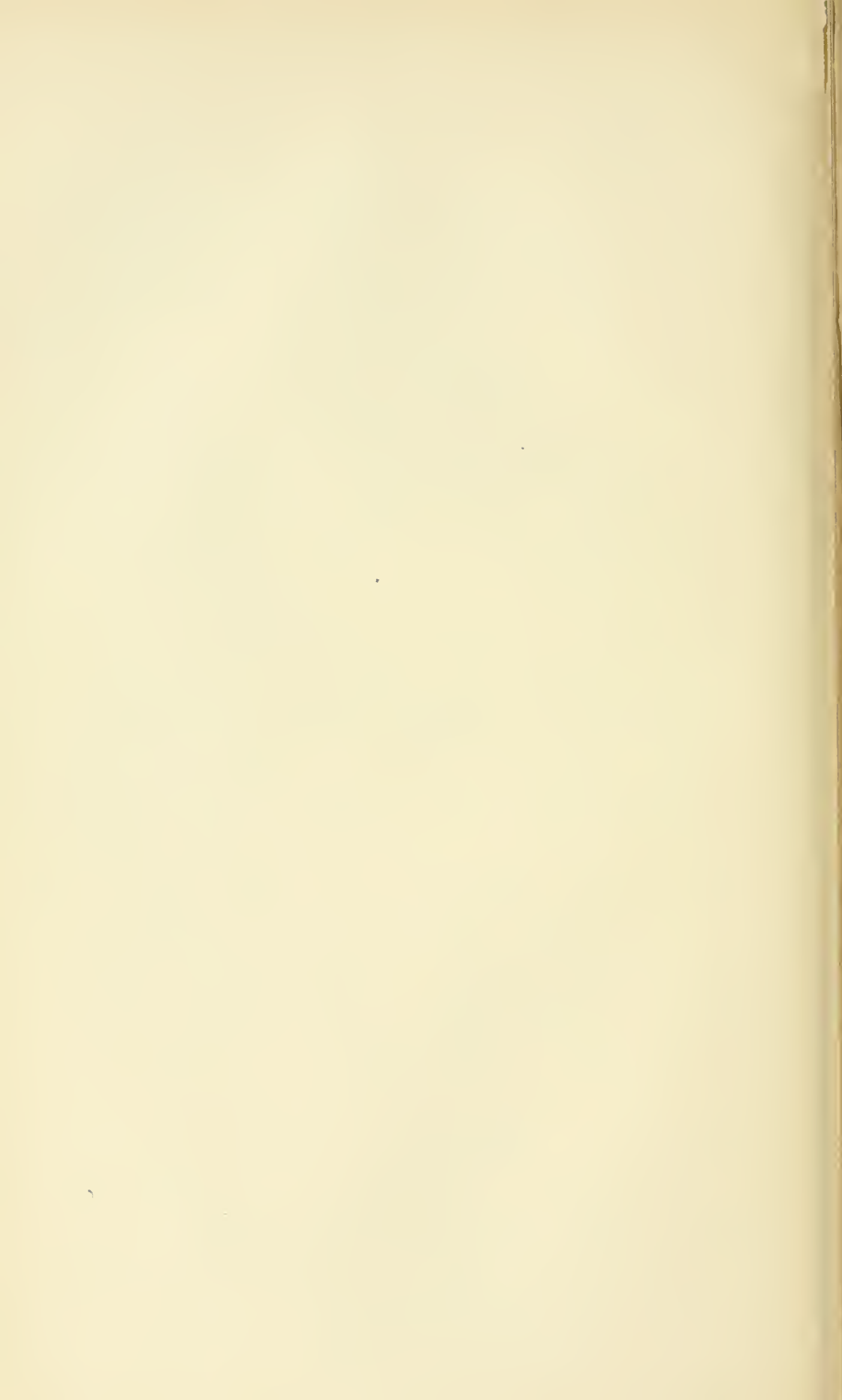


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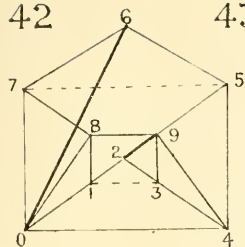




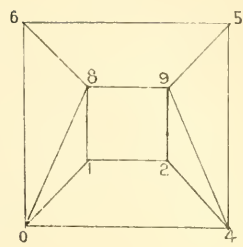
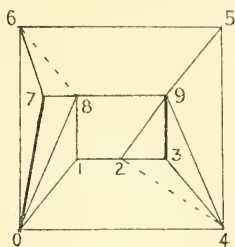


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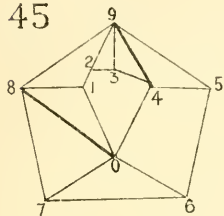
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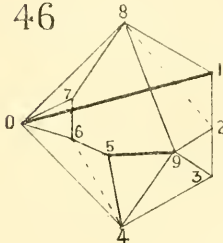
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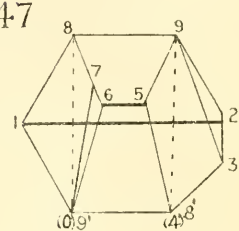
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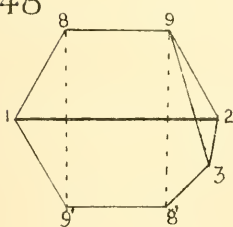
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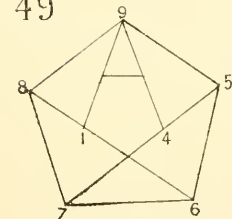
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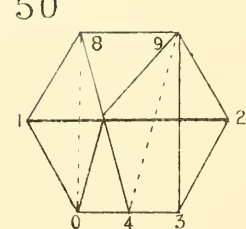
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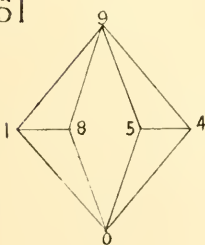
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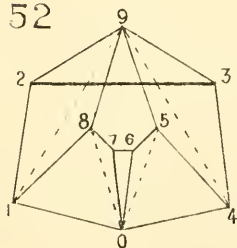
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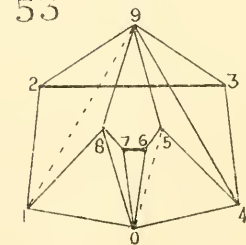
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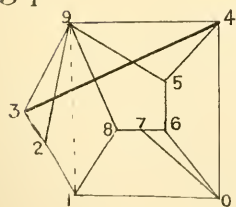
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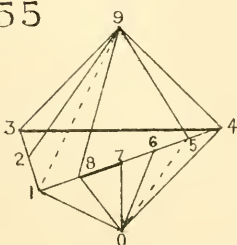
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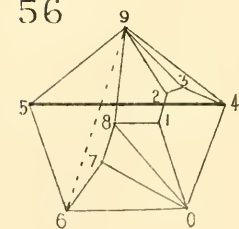
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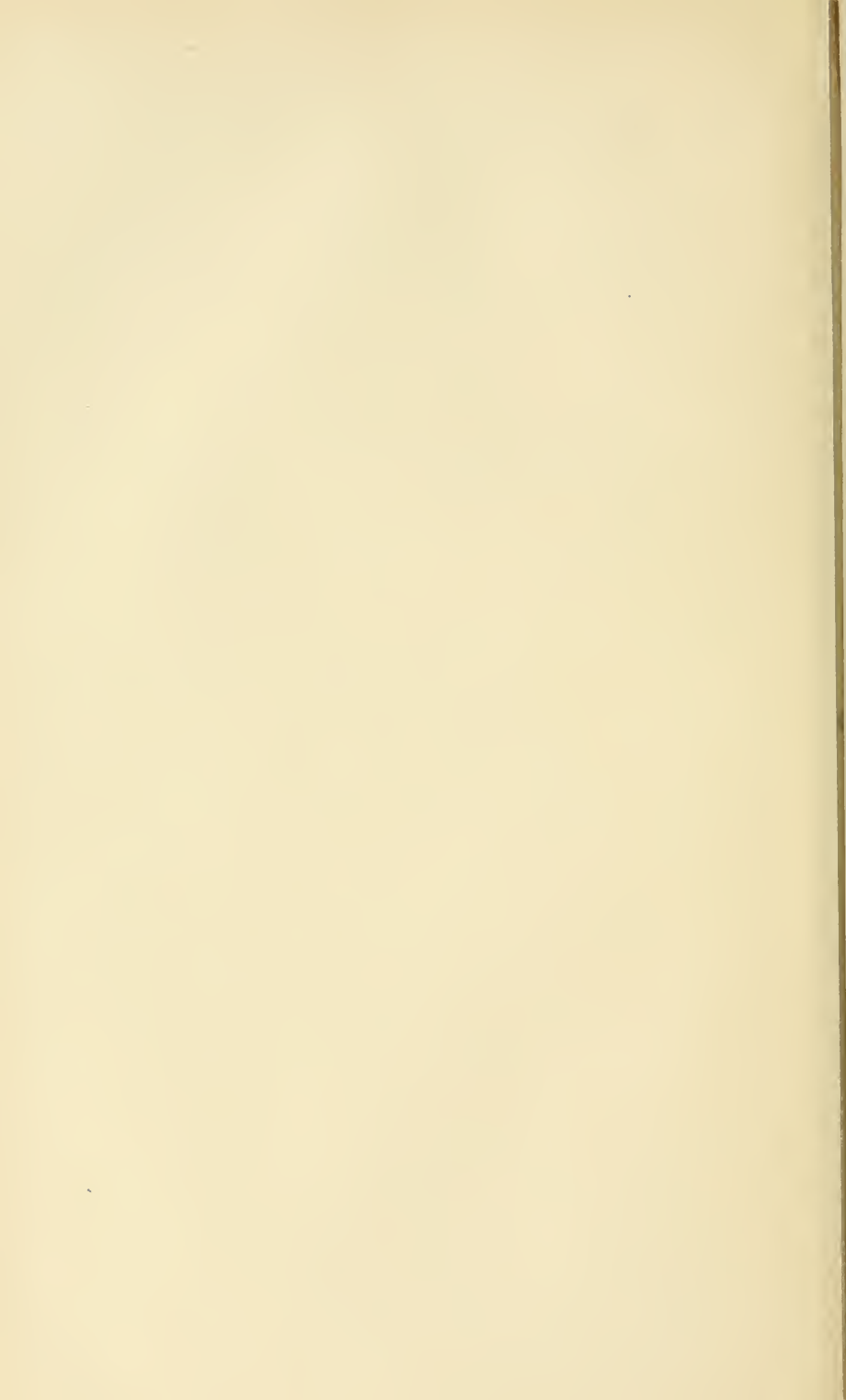


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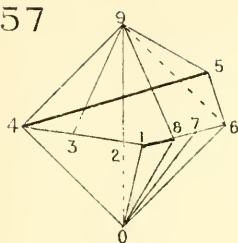


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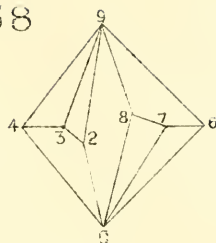




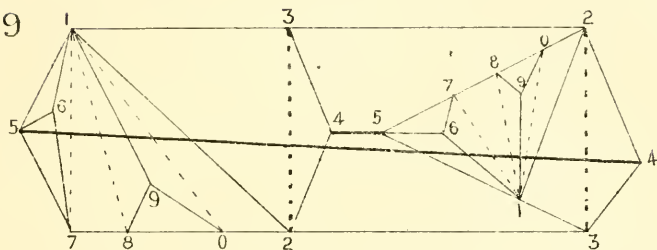
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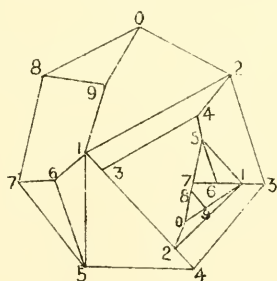
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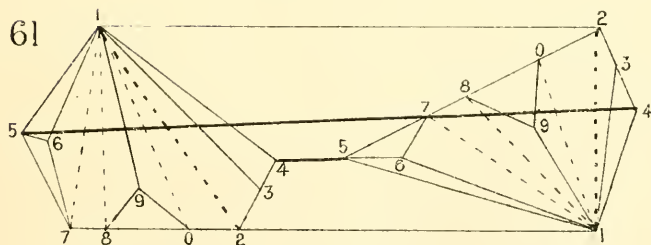
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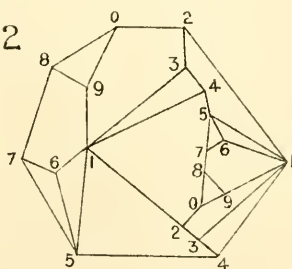
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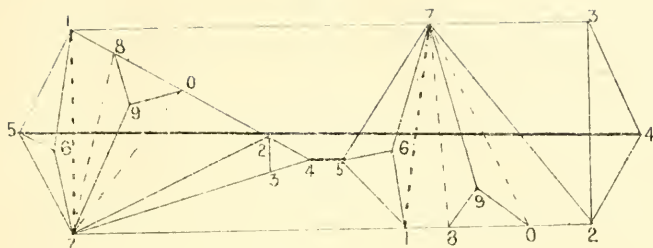


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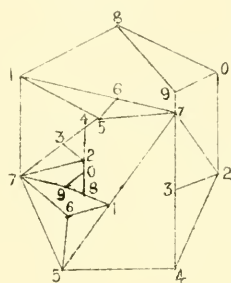




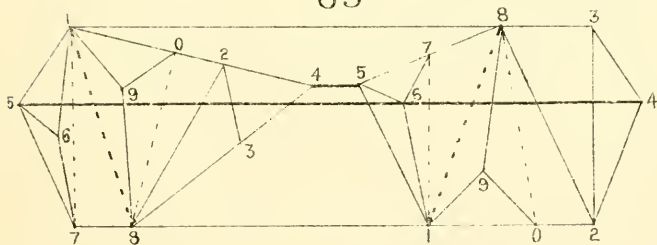
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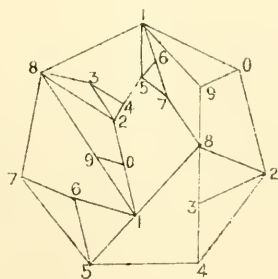
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COMMERCIAL EDUCATION.

By FREDERICK W. EDWARDS, M.S.A.

THE papers on practical education which I have formerly presented to the Society have dealt with three sections of this important subject. In the first, an endeavour was made to give a comprehensive idea of the general course of technical instruction adopted on the Continent. In the second, the same subject was considered with respect to our own country; and in the third, the scheme of Industrial Education advocated and practised both at home and abroad was generally set forth. I now propose to conclude the series with a review of the present state of Commercial Education in England and on the Continent. This will be mainly based, so far as the Continent is concerned, upon the long and valuable report drawn up by the Commercial Section of the International Congress on Technical Education, held at Bordeaux, in 1887; and, also, upon several recent continental works, descriptive of the various commercial schools in the chief countries of Europe.

THE COMMERCIAL SECTION OF THE FIRST INTERNATIONAL CONGRESS AT BORDEAUX.

The Bordeaux Report urgently enforces the necessity of a special commercial education, as distinct from an industrial one, for those students who are intended for a mercantile career. It also points out, in the clearest language, the immense change, virtually amounting to a revolution, which has affected the conditions of commerce. In former times,

and those not very far back, a few privileged peoples and localities possessed a practical monopoly in trade and manufacture. Then, the buyer came to the seller; certain goods, certain needs, could only be supplied at certain districts, or markets; and commercial intercourse went on in a definite and limited groove. Now, almost every western country is busy, providing not only for the needs of its people, but actively competing with its neighbours in every country where there offers any opening for the disposal of its wares. The producer, the seller, no longer waits for the buyer—his agents traverse the world, and he, whose commodities were formerly distributed without any special effort on his part, now finds himself in a crowd of others like himself, all engaged in the one common struggle for the possession of a market and the security of a customer. Cheapness of production without deterioration in quality, economy of transit and other like aids to success, were very soon recognised as essentials of the first consideration. But it was not until the competition grew keener, that commercial men, and such statesmen as had the sagacity to perceive the necessity of fostering international enterprise, felt that something more was required beyond these elementary essentials, to enable any business community to hold an advantageous position in the peaceful conflict of trade. Improved machinery, better educated artizans, and cheapness of locomotion and transit, were all very well, but the question was, how best to train your men engaged in the actual traffic itself, so as to fit them to trade in any part of the world, and put them on the right path for the discovery and creation of new and hitherto unsuspected fields. It was such considerations as these which induced the members of the Commercial Section at Bordeaux to congratulate the Minister of Public Instruction in France upon his introduction of a scheme of secondary education, which included a special course of study

in modern languages. They also recognised the need of adapting the school course to those destined for a commercial career, by passing resolutions to the following effect:—

I.—That the diploma of this New Secondary Education be assimilated, in the most general manner, to that of Commercial Education.

II.—That its curriculum be detached from that of Classical Education in a more distinct manner than at present exists, and that the instruction be provided in separate establishments.

The Public Schools and University Colleges of Great Britain are now happily following the same course, and instituting a “Modern Side,” apart from the old classical department, in their organisation, so that the study of living languages and the claims of commercial life may be fully provided for. But unless a national system of secondary education, as in France, is adopted, it is difficult to perceive how the provisions so far made will meet all the necessities of the case. The methods and programmes of commercial instruction abroad will be described later on, when it will be seen that although there is considerable variation, there is but one definite aim, and no difference of opinion as to the subjects required to be taught. The Commercial Section passed no formal resolution on this point; but it was decided, with respect to the schools of the First Degree, to recommend the *Ecole Commerciale* of Paris as a model for this class, and the hope was expressed that many more schools of like character would be founded. Concerning the superior schools, it was agreed—That the Minister of Commerce should give his official sanction to the diplomas of Commercial Schools by the appointment of suitable delegates to superintend their examinations. Several other resolutions were passed, touching the French military service, the exemption of commercial students therefrom, and their enjoyment of certain privileges.

The subject of evening Technical Commercial Schools was also taken up, but not pursued in any definite manner, as will be seen from the following conclusion:—That the founders of some of the numerous Evening Commercial Classes held in France and abroad, be requested at the next Congress, to give in detail particulars of their constitution and progress. An interesting discussion was originated on the subject of Free Scholarships. It should be remembered that the Chambers of Commerce in France direct, as a rule, the Superior Commercial Schools. Having in most instances funds at control, these corporate bodies offer yearly diplomas to the most efficient pupils, carrying with them sums varying from £80 to £100. The conditions attached are that the holder, after selecting some foreign country, must proceed thereto, and remain for a period of not less than twelve months. On his return, he is called upon to present a report on the climate, natural advantages, products, imports, exports, and other general information of the district in which he has resided. Having had the good fortune to meet and converse at length with some of these *diplomés*, it was a great pleasure to hear of the countries they had visited, to learn what interesting reports they had written, and what a large amount of experience and knowledge they had gained by means of foreign travel and study. One of them, in particular, had lately returned to his native city, and was carrying on a successful business with England, where he had sojourned for about two years. These Free Scholarships are a source of great power and advantage to Continental nations, and are looked upon as the most effective means of extending their business relations. The Commercial Section, therefore, considered it advisable to extend the limit of age from twenty-five to thirty years in those taking up their scholarships and proceeding abroad. The opinion was further

expressed that the number of travelling Scholarships should be increased, and that the two hundred Annual Scholarships of 2,000 francs each, proposed to be founded by the French Chamber of Deputies, was not sufficient for the encouragement of French interests abroad. It was resolved to ask that the amount be increased, and that the Government be requested to assist in the support of a greater number of Chambers of Commerce. The value of Free Travelling Scholarships cannot be too highly estimated, and the liberty may be taken of urging upon the numerous wealthy and large-hearted merchants of England, and such public bodies as Chambers of Commerce, interested in the matter, the provision of an adequate number of such Scholarships for that portion of the rising generation who intend to follow a purely commercial career. The remaining resolution adopted in the Report now under consideration that demands attention, refers to the Commercial Education of women. The Commercial School for women, at Lyons, and the Commercial Division of the Municipal School, in the Rue Bossnette, at Paris, having produced excellent results, it was decided to call public attention to these institutions, and encourage their growth elsewhere.

Turning now from these eminently practical suggestions of the commercial section to the various reports and papers contributed to the Congress, the one best deserving our attention is that by M. Salicis, whose position as Inspector-General of Public Instruction in France gives great weight to his opinions. He showed, with much pains and elaboration, the necessity of establishing, and the practicability of maintaining, an intimate connexion between the various departments of Technical, Industrial, and Commercial Education. He also clearly demonstrated in detail how this continuity might be accomplished in a national system of education. M. Salicis lays down that economic organisation

and teaching are primary factors and indispensable elements to success. Passing lightly over the fatal year of 1870, since which the public spirit of France has resolutely bent itself towards the diffusion of this economic education, he refers with just pride to the numerous establishments which under divers names have been called into life by the state, the departments, the municipalities, the chambers of commerce, the syndicates, the associations, and independent educators. He pleads for cohesion and for common agreement in the carrying out of their programmes. At present he warns them that they are imitating modern military tactics and fighting in open order. He acknowledges that the ordinary school life of a French youth is judiciously arranged ; that up to the age of seventeen years he receives a sufficient amount of grammatical, classical, philosophical and scientific instruction. But when he turns his attention to the superior schools—to schools of special application—he finds a want of unanimity in both the course and the aim of the instruction given. There is much solid wisdom in the counsel of M. Salicis when he urges commercial students not to be satisfied even with the advantages of a Parisian education, or with a visit to such places as London, Antwerp, Hamburg, Vienna, or Frankfort. They should go further afield, and study the affairs of the United States, South America, and even India, China, and the East. Comparing commercial traffic with the physical frame of man, he shows us how the merchant is like unto the brain which thinks, judges, decides, and contains and distributes nervous life. The mechanic or engineer is the spine from whence branch the motor nerves. The artizan is the muscle, acting under the double impulse of brain and spine. He argues that methods of instruction should be analogous to these physical functions, and that they should form a series of efforts in perfect accord with one another. M. Salicis sketches an ideal institution in which

the three industrial classes, the merchant, engineer, and artisan could be trained for a life of industry and commerce in separate departments. The lowest class consists of families unable to make any sacrifice for their children, or to keep them long at school before passing into some remunerative employment. The next, though more fortunate in this respect, lack the capital requisite for the creation or acquisition of industrial undertakings. The third are supposed to be sufficiently blessed with time, knowledge, and money to enable their children to take the fullest advantage of their educational opportunities.

M. Salicis then proceeds to picture a college adapted to all three, consisting of three sections with courses extending respectively over three, five, and six years. The primary section would naturally be one of apprenticeship, with a three years' course, enabling workmen to leave it at the age of sixteen or seventeen years, and including an extra class for superior artisans up to eighteen years.

The second to be devoted to mechanical and constructive engineering, with a five years' course, divided into a two years' apprenticeship, and three years for technical instruction. Students in this division to graduate at eighteen or twenty years of age, and be perfected by a system of overseership and, if possible, a year or so of foreign travel.

In the third section the study of industry in its highest developments would form a six years' course; comprised of one year's apprenticeship, two years' technical teaching, and three years' industrial training. The students of this latter school would leave at twenty or twenty-two years of age, and either travel abroad for two years, or sojourn during the same time in large manufacturing establishments. M. Salicis then proceeds to show how the unity of instruction which he advocates is to be gained, and how it must be based on the three orders of natural law—physical, chemical,

and dynamical—and, in conclusion, demands a rational as well as a methodical spirit in education, and contends that only by this will honest work, coupled with the development of good taste—so necessary for France—be acquired. He perceives plainly that the best education for the majority of citizens is that which either leads up to the handling of tools—to the workshop—or the transformation of matter in some shape or form. He finds that, if work or labour is to be efficient and profitable it can only be made so by the combination of intelligence with the hand and the eye. He admits that the love of work is not innate in man—that it comes by constraint, and that habit is only gained by degrees, and by prolonged instruction. For this reason he would subject every child as early as possible to the discipline of work as his best preparation for whatever fate may await him in life. Animated by these sentiments, France has created special normal schools for labour, and M. Salicis predicts the truth when he asserts that only by educated and organised labour can France remain the mistress of her markets, without resorting to those meaner devices of filching her competitors' trademarks, or counterfeiting their goods.

Much miscellaneous information was contributed by several delegates as to the enormous progress of general education abroad. Although Germany has promoted an efficient system of secondary and advanced Technical Education, it seems indisputable that in France Elementary Technical Education is more widely and evenly spread than in any other European country. Commercial Education has also received more systematic encouragement there than elsewhere. Remembering how completely paralysed the best energies of the French nation were after their disasters in the Franco-German war—that many successive ministries have fallen during the last ten years, the steady and uninter-

rupted growth of national education is simply astonishing. One interesting feature of the French system which should not be left unnoticed is the continuity with which instruction is carried forward in consecutive stages. The public schools of France are not only very complete and many-sided, but it is no exaggeration to affirm that a thorough training is provided for the entire population in almost every profession, trade, and industry, at an exceedingly low and often nominal cost. A tabulated list of her numerous institutions would be a formidable compilation, especially when we consider that in Paris alone 200,000 children are receiving an excellent industrial training, and are freely supplied with books and stationery, and, where needful, with food and clothing by this municipality. Referring now to Germany for a moment, it is significant of her enterprise that the latest idea of the Germans for facilitating business intercourse with Eastern nations, is the establishment at Berlin of a school for instruction in living Oriental languages. By offering a training in Arabic, Hindustanee, Persian, Chinese, and Japanese, they aim at qualifying young men for the careers of merchants, travellers, consuls, dragomen and scientists. German education, whether professional, commercial, diplomatic or scientific has long been adapted to facilitate direct commercial intercourse with merchants in other countries. Having now given a fair epitome of the report of the Commercial Section of the Bordeaux Congress, the general ideas and views presented will prepare us for the consideration, which we will now take up, of the Commercial Schools of the Continent.

FOREIGN COMMERCIAL SCHOOLS.

These schools are rapidly springing up in every large town or city in France, Germany, Austria, Switzerland, Belgium, Denmark, Italy, Roumania, Russia, and Sweden.

These countries now thoroughly recognise the fact that the prosperity of their industries is not merely dependent on their ability to produce the highest quality at the lowest cost, but that it is also due to the facility with which they can buy material, and sell the manufactured article on the most favourable terms. They are now fully alive to that other fact, that modern science has considerably diminished the cost of production; while they are also conscious that the spread of education is sharpening competition, and that success in this competition will only fall to those who are the best educated for the conflict. Professor Huxley recently pointed out the difference between warfare and industry. "Industry," he said, "did not break heads, and it did not shed blood, but it starved the man who failed in the war of competition, and the nation which succeeded in the war of competition beat the other by starvation."

The severe conditions under which nations are now compelled to carry on industrial competition are, indeed, very similar to those of a warfare in which no quarter is given, and the nation which neglects to discipline its citizens for this incessant commercial warfare will eventually be compelled to submit to disasters as destructive as those of a signal defeat in arms. In general terms, Lord Salisbury has shown us from whence must come relief. "The first necessity of mankind," he said, at the Mansion House, "was to live, and their first duty was to work; the first duty of education was to enable them to live and to fit them for work." When we examine the constitution of the principal commercial schools of the Continent, we shall find that much has been done in obedience to this first duty of education, by fitting immense numbers of the population to work efficiently in every department of trade and commerce. Our Continental neighbours were the first to discern the general principle that however imperative production may be, the

trade of the world has become so international and cosmopolitan that production must be closely allied to, and rapidly followed by, suitable distribution. It was their sense of this that compelled them to provide the remedy, and it is the same sense which has created the growing demand in this country for a better system of commercial education. It may be stated at the outset, that suitable distribution, as regards England, is for the present hampered by three cardinal defects—want of knowledge and adaptability, lack of enterprise in finding new markets, and indifference or inability to make the commodities that such markets require. It will be more convenient by and by to show how far this is the actual state of the case; but is it not obvious that such national defects can only be removed by a more practical system of school instruction? Such must have been the view of the Royal Commission on Trade Depression, from whose report we learn that “in the matter of education, we appear to be particularly deficient, as compared with some of our foreign competitors. This remark applies to not only what is usually called Technical Education, but to the ordinary Commercial Education which is required in mercantile houses, and especially the knowledge of foreign languages.”

CLASSIFICATION OF FOREIGN SCHOOLS.

Commercial Schools abroad may be generally divided as follows:—

A. Schools of the first degree, where pupils are admitted at about twelve years of age, and retained for a period of three or four years.

B. Superior Schools, taking students at the age of about sixteen, and keeping them for two or three years.

Both these institutions vary in detail, according to the respective countries in which they are situated. In some

instances, they are maintained by companies of merchants, or by Guilds, and other similar societies; in others, by Chambers of Commerce; but more frequently by the joint effort of state and municipality. In Germany, Austria, Belgium, and Switzerland, a large amount of State support has been provided; while, in France, they have been mainly founded by local authorities and Chambers of Commerce. Whatever be their pecuniary resources, they all have one common aim.

SCHOOLS OF THE FIRST DEGREE.

The Schools of the first degree offer instruction in necessary mercantile subjects with the elements of English, French, and German, to all youths who have received a good elementary education in the Communal, or Municipal Schools. They thus give a fair commercial training to the middle and lower classes, who are compelled to commence business life at the bottom of the ladder, and whose advancement depends entirely upon their ability and energy. These schools may be cited as another proof of the decay of the old apprenticeship system, and of the necessity that has arisen for a more specific instruction to fit the rising generation for its place in the world. The curriculum at Plauen, in Saxony, will show the kind of ordinary instruction given in a first degree school. Students cannot attend under the age of fourteen, and must have passed through all the elementary course. The training continues for three years, and includes:—German, French, English, history, geography, mercantile arithmetic, book-keeping, correspondence, counting-house work, mercantile science, and calligraphy. These schools are open two or three hours every day—either from 7 to 9 a.m., or 2 to 4 p.m. It will be noticed how that apprentices must combine a school and business career during this period of their lives. Although

the system has been generally adopted in Saxony, it appears that many Principals of firms object to this withdrawal of their employés for ten or twelve hours a week, and decline to take boys into their offices and works until they have passed at least the lower division. The Institut Commerciale, of Paris, is an excellent example of a Primary Commercial School, where practical studies only are undertaken. Founded by a company of merchants, its special object is to train those who intend to engage in any foreign trade. The pupils enter at thirteen or fourteen for a three years' course. In foreign languages, all grammatical technicalities are ignored, the teachers simply conversing with their students about articles and transactions of commerce. Trade operations are illustrated from the books of extinct firms, and the coins, weights, and measures of all nations are included in mathematics. Lectures are delivered by merchants and manufacturers in their own special subjects. Visits are paid weekly to warehouses and manufactories in and around Paris, and the students are afterwards required to furnish written descriptions thereon. The syllabus of foreign trade includes the acceptance, transmission, and execution of foreign orders; the handling and examination of goods, packing, carriage, insurance, current prices, samples, trade marks, protection of French interests, climatology, moral qualities necessary in representatives of French commerce, returns of imports, consular reports, customs, telegraphic codes, and methods of payment.

SUPERIOR SCHOOLS.

The aim of the superior schools is to give to youths who have received an ordinary middle class education, complete mercantile instruction in all subjects, including modern languages, that will fit them for the position of clerks, book-keepers, managers and heads of business concerns. These

schools have been very successful, particularly in Germany, principally because they provide the special form of education needed for those intending to follow trades and professions. Both in France and Germany opinion is much divided as to whether or not the superior schools should be entirely of a practical nature, and in effect, be converted into model business houses. At the *Ecole Supérieure de Commerce*, and the *Ecole des Hautes Etudes Commerciales*, in Paris, the negative view is carried out, and a general theoretical training is supplied as a foundation, followed later on by instruction in actual business procedure. The *Ecole Supérieure de Commerce*, which is controlled by the Paris Chamber of Commerce, is one of the oldest French commercial schools in which an endeavour is made to combine theory and practice. Students entering must not be under fifteen years of age, the course lasting three years. The first year is preparatory. In the second, the instruction becomes specialised and more purely commercial. The pupils must perfect themselves in German and English, and commence either Spanish or Italian. In mathematics they are practised in rapid calculations, and must solve questions by reasoning rather than by artificial rules. Book-keeping is taught by practical application, and visits are paid every week to manufacturers in the neighbourhood, and the students are annually taken to the larger industrial towns of France and Belgium. Before the expiration of the three years adequate instruction is supplied in commercial geography, history, law, correspondence, statistics, arithmetic, algebra, applied physics and chemistry, taxation, finance, banking and counting-house work.

FOREIGN HIGHER COMMERCIAL COLLEGES.

There is yet a third class of institution, providing a course of study in purely technical mercantile subjects to

those having already received a full training in the Real schools or Gymnasien. Their existence has only been a short one—they are few in number, and have been founded principally in Germany. In all but the name they are University Colleges, giving the very highest instruction in the science of modern commerce. Their object is to train those who have had the advantages of a liberal education, to become not only proficient in business, but to qualify themselves for the positions of consuls and magistrates in commercial courts, and arbitration-assessors in trade disputes. The Paris Chamber of Commerce established in 1881 one of these high Commercial Schools. Among other special subjects lectures are given on commercial and maritime law, judicial procedure, and financial legislation. The *Ecole des Hautes Etude Commerciale*, at Paris, has had a prosperous career, a fact which English Chambers of Commerce might do well to carefully consider. The *Handels Academy*, of Vienna, is the most famous of the higher mercantile schools of Austria. Founded by a body of private merchants, it is nevertheless a public institution, under the control of the Austrian Minister of Education. The curriculum is divided into a one year's course for students who have finished their general education, and a three years' course for pupils who have passed the Real Gymnasien, or the four lower classes of a Gymnasien or Real School. Its particular object is to train, not merely clerks, managers, and other employes of commercial life, but to give suitable instruction for future principals and heads of business concerns, such as bankers, merchants, manufacturers, and even political economists. The theoretical course of book-keeping is elaborate and complete. In the first year general practical counting-house work is taught; in the second, book-keeping by several methods is gone through; while in the third, an imitation Bureau is established for exemplifying the book-keeping

systems of large banks, companies and commission houses. An exceptional feature is the training provided in the last year in trade usances and the calculation of produce, which includes the business methods of many different markets and exchanges, dealings in raw and manufactured material, together with import duties and tariff charges. From the foregoing it will be perceived how extensive and efficient are the mercantile schools of the Continent.

In addition, attention may be profitably directed to the Real Schools of Germany, as reorganised in 1859. These are now neither more nor less than great commercial academies. The course of study is nine years. No Greek is taught, and less Latin than at the Gymnasien, which prepares for the Universities, but much time is bestowed on German, French, English, mathematics, and science. In foreign languages there is no attempt at fluency in conversation, but instead the pupils are well grounded in the master-works of great national writers. To overcome linguistic difficulties, students are encouraged to pass some time in other countries, so as to gain conversational power and mastery over idiom by personal contact with the natives. It must be noted, however, that Germany is not by any means abandoning her hold upon classics, either in the Gymnasien or Real School, and that the authorities strictly enforce their study.

OTHER FOREIGN COMMERCIAL INSTITUTIONS.

There exist in Paris free commercial evening classes, which are maintained by different societies and institutions for the benefit of both men and women. Those between the ages of fourteen and twenty, whom necessity has compelled to enter a business career very early in life, may here in the evenings have all the advantages of an ordinary day commercial school, and thus bring themselves up to the level of those

whose circumstances have provided them with an efficient instruction in the ordinary course of things. The Ecoles des Commerce of France have long been conspicuous for the ample provision they make for the equipment of young men for commercial purposes. One of the best and most thoroughly organised is the Ecole Supérieur de Commerce, of Paris, founded in 1820, already noticed. Other countries, especially Germany, have since largely followed the example which France has set, in the institution of these superior commercial schools. Belgium offers suitable instruction at many Ecoles Moyennes. In addition to these, she can look with pride upon the celebrated Commercial Institute at Antwerp, in the establishment of which, thirty-six years since, commerce and science joined hands to endeavour to adjust the problem of mercantile education.

Those who have visited Belgium can bear witness to the superiority of, and special facilities offered by, their system of instruction. It may be asserted that as regards excellence of training combined with lowness of fees, no such institutions exist in England, and it would require almost a revolution in our present ideas ere we could utilise the advantages offered. It might be difficult to demonstrate clearly that the great commercial capacity of the Belgians is entirely due to the influence and practical nature of the instruction given in these schools; but just inference may be drawn from the fact that Antwerp is now competing most successfully with our British carrying trade, as well as rapidly lessening the greater tonnage in and out of the respective ports as compared with Liverpool. It may be of assistance to many parents to draw more particular attention to the Antwerp Commercial Institute, founded by royal decree, under the joint control of city and state. Being easily and cheaply accessible by water to foreign students, it is not surprising to find that they comprise one-third of its

total number. An entrance examination is imperative. Belgian boys attending ordinary commercial schools are gradually led up to it; but foreign youths generally require a preparatory course, and a special class is held for them during the four months preceding the October term of each year. The entrance examination comprises a composition in French, and a translation from French into German and English, physical geography, commercial arithmetic, book-keeping, rudiments of universal history, and natural philosophy. This test is usually too severe for foreigners, and is modified in their favour, especially in languages. The course is two years, and the fees are £9 for the first, and £11 for the second year. Should the student fail to secure a diploma at the end of this period, he is allowed to retrace his steps at half the original fees. The curriculum is a very extensive one, and involves the study of every commodity known to civilisation, its production and distribution, and all appertaining to its purchase, shipment, transfer, and sale. French is the ordinary language of the students, but efficient instruction is supplied in Spanish, Italian, German, Dutch, and English. With such inducements, and at so low a cost, we cannot help admiring the wisdom of those heads of families who bestow upon their children the benefits of a Continental hall-mark, sanctioned by the security of Government control.

Italy has a complete system of commercial education; while the little kingdom of Roumania supports six public mercantile schools. The ordinary schools of Switzerland devote so much time to commercial instruction that no special institutions are needed. Holland has efficient commercial schools at Amsterdam, Enschede, and Haarlem, and in addition teaches book-keeping, knowledge of materials, commercial law, and political economy, in her ordinary schools. Although varying considerably in detail, the general

curriculum of all these institutions is much the same. Immediately a student decides to adopt a commercial career, classics, and even science, are abandoned at a certain point, and modern languages, together with the principles and practice of commerce, substituted. Having acquired a sufficient mastery over the language and literature of his own and one or two other important nations, he enters upon a more specific course of study. While mathematics are not carried too far, arithmetic must be learnt up to its highest branches. Industrial and economic geography, political history and economy, the transfer, distribution, and characteristics, of raw and manufactured articles of commerce, their chemical and physical properties, the laws and conditions of soils and climates, the resources of countries, their imports, exports, customs duties and tariffs, are studied in their multifarious conditions with an earnestness of application which can scarcely be comprehended in this country. Students must in addition make themselves proficient in other forms of mercantile knowledge and operation, such as prices, weights, measures, currency, credit, bullion, bills of exchange, insurance, consular work, the natural divisions of commerce, and sources of demand and supply, and the legal aspect of partnership, companies, and trading generally. It may be gathered, therefore, how by an harmonious blending of knowledge and purpose, theory and practice, intelligence and capability, and mind and body, the Continental youth is in a position to use commercial knowledge profitably at about the same age as the British boy commences to seek it; the simple explanation being that the foreigner has made mercantile training a science instead of merely a trade as it is with us.

DIVERSITY OF FOREIGN SYSTEMS.

Although the object is the same, the systems adopted by

the various mercantile schools of the Continent are not uniform. The special report on commercial education, presented by Messrs. Percival, Summers, Felkin, and Paton to the Associated Chambers of Commerce last year, clearly exhibits the difference in this respect between the Bavarian, the Saxon, and the Austrian methods. The Bavarian is a six years' course. Taking boys from ten to sixteen years of age, it combines mercantile with general instruction. Commercial subjects are only taken in the last two years, but the preceding years are preparatory thereto. The Saxon consists of a three years' course, beginning at fourteen or fifteen years of age, upon completion of an elementary education. The special mercantile subjects predominate, and a general education is only continued as far as may be necessary to obtain the military certificate. But the commercial curriculum is much more extended than the Bavarian. The Austrian is also a three years' course, beginning at sixteen or seventeen years of age, when the general education is completed. It is almost exclusively mercantile. Students remain up to nineteen or twenty years of age, and are trained so as to render ordinary business apprenticeship unnecessary. It will thus be observed that while the Bavarian system offers the minimum of mercantile instruction, it gives the best preparation for future business apprenticeship. The Saxon only does so to a certain extent, while the Austrian endeavours to supplant apprenticeship altogether. Though based on different principles, and having essentially distinguishing characteristics, we have here represented three methods which the countries named deem best for securing an efficient mercantile education, together with the general culture required for the social position which will hereafter probably be attained. There is no occasion to discuss at any length the question whether it is possible to give efficient mental training by

instruction in mercantile subjects, merely combined with foreign languages and modern science. The analysis already alluded to shows plainly to what perfection mercantile education has grown. It demonstrates, moreover, the fact that apprenticeship in business life, as in industrial work, will be to a large extent probably superseded, and that students must in the future be more thoroughly prepared for commerce in the school, rather than in the office.

The question may now be reasonably asked why Continental nations began, before we did, to feel the necessity for a more advanced mercantile education. That it was due to the desire to develop their new-born industries is obvious. Their commerce had for a time to struggle for an existence against the established position and influence which ours had already attained. The natural, indeed, the only, alternative was to improve the education of their people in every conceivable form. This determination became very apparent after the battle of Jena, when the King of Prussia, in a celebrated proclamation, used these words:—"The State must gain in intellectual power what she has lost in material power, and to this end I desire that everything be done to extend and perfect the education of the people." Overwhelming defeat and bitter military adversity had forced the conviction that the mind of a nation was worth more than its soil. Germany has since accomplished so much by increased educational means that the relative position is more evenly balanced, if not actually changed against us. Without further comment on the Continental position, we will proceed to enquire what steps are being taken in England to follow the examples referred to, and restore, if possible, our commercial supremacy.

ENGLISH COMMERCIAL EDUCATION.

The English Universities propose that the Oxford and

Cambridge Schools Education Board should issue, after due examination, a commercial certificate. This examination is intended for persons of seventeen years of age who desire to enter commercial life. Candidates are required to pass in arithmetic and algebra; English (including shorthand, as a voluntary subject); at least one modern language and its colloquial use; geography, and one literary or scientific subject. The City and Guilds of London Institute have for some time past made instruction in French and German obligatory, it being the only literary training they give. Their desire in doing so is to enable students to ascertain from the trade journals of other countries the progress made in industrial and scientific matters, and also to increase their knowledge, by giving them the power to communicate freely with foreigners. The Charity Commissioners have expressed their willingness to adapt some of the old endowments to the purposes of commercial education. The Society of Arts which, several years ago, inaugurated commercial examinations, has, with the hope of making them more practical, decided to extend the curriculum to special subjects relating to different branches of commerce. For the present, these subjects are confined to the commerce of food, and the commerce of clothing, but it is intended to add other divisions, as time and experience may demand. The syllabus treats of the main divisions of trade, and candidates are to be examined, not only over an extensive field of theoretical commerce, but, when possible, will be required to practically examine and report on samples of goods. This Society having always exhibited the deepest interest in the spread of education, there is much reason to believe that its activity and influence will, in this new effort, result in an improved state of things. Among other attempts, mention may be made of University College, Liverpool, where a two years' course of study has been initiated; and other similar bodies

are adopting the same idea. It must be apparent, however, that all the efforts named require to be brought into one common system if they are to affect the educational machinery of the country at large. The old Oriental mythologists pictured the earth resting on an elephant, and the elephant on a tortoise; but what supported the tortoise they omitted to show. It is to be feared that our present system as a whole does not rest upon a much more secure basis.

The need of reform in this respect may be gathered from some of the remarks made at a representative conference of educationalists, held in London some time ago. Sir John Lubbock then stated that, with regard to Public and Endowed Schools, the return which he moved for three years ago showed that out of 240 principal schools, there were no less than one hundred in which science is either not regularly taught, or only one hour per week devoted to it, and that of the whole number only twenty devote as much as four hours per week to this important subject. With reference to modern languages, there are forty schools in which either they are not taught, or less than two hours per week are given to them. In more than half the schools, less than four hours a week are allotted to modern languages, an amount obviously insufficient. There are only thirty schools out of the whole number in which as much as six hours per week are devoted to modern languages, literature, and history. At some of the largest, and in many respects, the best institutions, French and German when taught at all, are taught as dead languages. It is often alleged that we wish to drive out classics and literature. This is an entire mistake. What we claim in public schools is that out of, say, thirty hours per week, six might be devoted to science, six to modern languages, six to arithmetic, and two to political geography; there would still be left ten hours for Latin and Greek. The proposals of Sir John Lubbock, as

to the redistribution of the curriculum of our Public Schools, are extremely moderate and well grounded. At the same time, do not let us overlook the difficulty that must always arise where instruction is required, on the one hand, for those intended for a professional career; and, on the other, for those only destined for commercial life. Their objects and requirements are so diverse that it will probably be found impossible to bind both by the same rules, and uniformity is not possible, even were it desirable, under such circumstances. It is many years since Milton wrote, "We do amiss to spend seven or eight years merely in scraping together so much miserable Latin and Greek as might be learnt otherwise easily and delightfully in one year." If this was correct in his day, how much more so must it be now, when the knowledge of modern languages has such a strong connection with our commercial necessities? Time will not allow of a further enlargement of the deficiencies of English commercial education, but confirmation may be added in another direction to present in stronger terms the wisdom of its more special adaptation to meet these necessities.

FOREIGN CONSULAR REPORTS.

Consular reports from British representatives, the most useful portions of which are now regularly embodied in the monthly journal of the Board of Trade, tell in what manner our commercial education is incomplete, and go far to solve the troublesome problem as to why we are losing ground abroad. In addition, they teem with interesting details of the material resources of foreign countries. Many of our Consuls point out, with much intelligence, the opportunities that exist in their several districts for an increased trade with England. Inspired by local knowledge, they also offer to traders practical hints for introducing or increasing the

sale of numerous commodities. This new feature in these reports has fortunately arisen owing to instructions lately issued by the Government to the consular body to report fully on all mercantile matters, as well as on the efforts made by foreign competitors to supplant us in their own and other markets of the world. By the distribution of official information in an easily accessible form, we are now in a position to investigate more readily the subject of the unprofitableness of trade, and its depression in recent years. It has been said that if Louis XVI had only put his ear to the ground and heard the rumbling of the earthquake which overwhelmed him and his monarchy, he might have averted his doom. Let us be wise in time, and prepare to turn aside the dangers which threaten our trade by studying these consular reports, which are so singularly unanimous in the conclusions they force upon us. In the first place, it appears to be undeniable that, in those instances where we have lost the commerce of a foreign market, our traders have suffered from want of proper information; and that, secondly, in almost every case where foreign goods are supplanting British, it is not on account of superior quality, or cheaper cost, but rather that we are neglecting to adapt our productions to the particular wants, or peculiar tastes, of the people—in short, our commercial education is at fault.

You will remember it was stated that one of the three cardinal defects of the English manufacturer was want of adaptability. Let us now look a little further into this charge. The evidence seems indisputable, that when a continental trader determines to cater for a foreign customer, he proceeds upon diametrically opposite lines to ourselves. His actions have the merit of being simple, intelligent, and profitable. Commencing with an efficient knowledge of the language of the people with whom he proposes to have business relations, he employs well educated travellers to

study their habits, and push his particular wares. He finds out what class of goods the foreigner wishes to have, does his utmost to make them and thus secure his custom. In addition he corresponds with his customers in their own tongue, he invoices the goods in their own currency, pays the necessary duties, and delivers them free at their own doors. British commercial policy has hitherto been to the contrary. Knowing so well what suits ourselves, we have insisted too much on forcing our commodities on others not similarly situated in habit, climate, or means of purchase. The indifference and neglect of English manufacturers and their unwillingness to adapt their products to specific requirements, is mainly responsible for our loss of foreign trade. The British consul at La Rochelle recently reported:—“There is undoubtedly an immense amount of business lost which might be done if British manufacturers went the right way about it, but I see no change in the old ways; people here will have their fancies, and although British shapes and makes may be a great deal better, they do not seem to see it, and it will be found much easier to suit these fancies than endeavour to make them take the English view of what is best for them.” It is a well known fact in natural history that bees desert the flowers of the old colours for newer ones, and that the faintest variation in tint will attract them in such numbers that the old plants often perish by their neglect. The Continental manufacturer evidently believes in a simple and natural philosophy of this sort, and successfully applies it to his commerce. Then, again, the English consul at Genoa deplores the suicidal policy of certain English exporters who, on receiving orders for goods manufactured in this country, send in response those made in Germany; and he seems to think it incredible that firms of any standing can be so shortsighted. Report after report could be quoted detailing how we are losing some of the

foreign trade we had, and how the merchants and manufacturers of other nationalities are taking our place because we will not give up our antiquated ideas, or adapt our goods to the needs and tastes of those who require them. In numerous instances we find that the British article is really better than the foreign one, and generally quite as cheap ; but the customer will not look at it because it is not exactly what he wishes. Consul Bristow, of Chee-Foo, says we persist in sending the wrong sort of razors ; and Consul Oxenham, of Chin-Kiang, tells us it is no use our shipping matches there unless the size and price of the boxes are reduced. It may be quite wrong of the Chinamen to decline to have our excellent Sheffield razors, and to prefer the short thick-backed ones made in Germany instead. He may also repeatedly burn his fingers in using matches only two-thirds the length of ours ; but there are probably 600,000,000 Chinamen, and they are not only a wondrous race for shaving, but must consume an enormous quantity of matches. Our trade with Italy is not as satisfactory as it should be. While the increase in our exports there has been 16 per cent., that of Germany has been 102 per cent., and Belgium 150 per cent. The explanation of this is stated to be Continental competition, coupled with want of activity and trade facilities on the part of British firms. Everywhere in Europe, and also across the Atlantic Ocean, the same tale is sent home by resident Consuls that our Continental competitors are in more sympathetic intercourse with the importers and distributors of foreign commodities, and are thereby securing the bulk of the trade.

MR. GRIFFIN'S REPORT.

Mr. Griffin in his report on competition with English foreign trade, admits that the export trade of Germany has increased more rapidly than ours, and that the United Kingdom, to some extent, is not increasing its emporium

trade. This loss of emporium trade is probably due to a change in the great currents of commerce. We are fairly certain that we can never compete on equal terms with France and Germany in the silk trade, nor can either of the countries named deprive us of our enormous bleaching powder or tinplate business. The danger rather lies in our losing many of the smaller markets of the world in numerous industries employing large numbers of the working classes. In this connection let us bear in mind that the Britain of to-day cannot possibly exist by internal trade. External business is, therefore, a condition of commercial existence, and we shall suffer heavily in the future if we lightly regard statements so authoritative, or allow any disastrous change to come upon us unawares.

MR. GOSCHEN'S SOLUTION.

Mr. Goschen, in his Rectorial Address at Aberdeen, endeavoured to analyse the dangers of our position. He holds the theory that although you may give the rising generation special business instruction, teach them several languages, and found High Schools in imitation of similar foreign institutions, they will be of no avail unless a greater love of work for its own sake can be inculcated. He also expresses the opinion, founded on his own experience, that the German clerk is much superior to his English prototype. While looking at the subject from the highest intellectual standpoint, and admitting that British commerce has been mainly built up by unerring instinct and audacity of enterprise, Mr. Goschen does not appear to acknowledge sufficiently that it was to a large extent personal interest, aided of course by natural shrewdness, that over and over again proved to be enough to ensure success in the past. It may be desirable to encourage intellectual interest, and also to foster the establishment of general principles, rather than

the easier methods of compromise commonly adopted by business men; but is it not a fact that severe competition, and absorbing attention to detail, allow of little leisure to the average British merchant, in which to consider the intellectual conditions that some may deem necessary to success? Being conscious that as traders we have lost the control of many foreign and colonial markets, that we must be prepared to meet Continental competitors in others, and that those who were once our customers are now often our rivals, does it not seem probable that in spite of Mr. Goschen's ideal merchant, personal interest, or, to put it more exactly, the necessity of living, and not intellectual considerations, will mainly govern our future conduct in commerce? The German clerk may exhibit an untiring zeal for work, offer his services for the smallest remuneration, and exist on the barest and simplest regime, but is it not personal interest that brings him here and takes him away again? This individual who is portrayed for us in Walter Besant's *Katherine Regina*, tells us distinctly that he does not always mean to live the life of a clerk on a pound a week, but that sooner or later he intends to trade for himself in our markets and be a serious competitor. As personal interest therefore alone induces this love of work, we must not mistake the effect for the cause. Mr. Goschen is on firmer ground when he proceeds to consider the factors underlying the demand for a better education of our largely increasing population. He finds that the recent rapid growth of trade among the Germans, together with their greater eagerness in commercial enterprise, is due to the scientific spirit which has pervaded their education, and that the comparatively slower progress of our own trade is the result of neglect in this respect. He allows that our long continued supremacy, which passed virtually unchallenged for the better part of a century, is responsible for this

neglect. And last of all he sees how backward we are in this modern spirit, and that without it the unerring instinct and audacity of enterprise of former days will not avail us. Without discussing with Mr. Goschen whether greater knowledge, or a greater love of knowledge, is of the most value, the trenchant address of this combative statesman may be passed over with the obvious assertion that, first and foremost, the greater knowledge is imperative, and must be supplied from a competent source and authority. Erostratus set fire to the Temple of Diana, at Ephesus, in order that his name might be remembered. The co-ordination and re-adjustment of English Commercial Education presents a favourable opportunity to some prominent legislator to secure an equal measure of fame by far worthier means.

CONCLUDING PROPOSITIONS.

Two general propositions may be drawn as conclusions to the many facts and opinions here set forth :—

I.—That only those nations who are able to produce, and distribute, requisite commodities, in the cheapest manner, or, who can offer the most desirable and attractive goods, or, can manufacture that which cannot be obtained elsewhere, will have any chance of attaining an advantageous position in the future trade of the world.

Our early manufacturing supremacy before other countries became possessed of equal knowledge and power is a sufficient confirmation of these points.

II.—That only such countries as put themselves in a position to supply the necessary education for commercial production and distribution can expect to maintain and increase their foreign trade.

It would be a work of entire supererogation to enlarge on the benefits of commercial intercourse; but new emphasis

may be given to the lines of Cowper, which were written in an age of marvellous industrial growth and prosperity :—

“ The band of commerce is designed
To associate all the branches of mankind,
And if a boundless plenty be the robe,
Trade is the golden girdle of the globe.”

DOMESTIC EDUCATION IN ELEMENTARY SCHOOLS.

By Miss FANNY L. CALDER.

It might perhaps seem irrelevant to the discussions of a learned society to introduce the subject of domestic education, were it not that it is so intimately connected with two of the most burning questions of the day, to solve which the judgment and ingenuity of all thinkers is being taxed, viz., elementary education, and the employment of the unemployed; or, as I might almost venture to call them, the “*unemployable*.”

It touches also on another point which is daily gaining in importance, and must, sooner or later, rise into prominence with the rapid increase of population and the prophesied decline of wages; this is, the more thrifty use in England generally of foods which in other countries are made the most of, so adding to the wealth of the nation; whereas, in England, prejudice partly, but ignorance chiefly, waste and throw away much that would materially contribute to maintain the health and strength of the people.

Since this paper was written, an article by Lord Meath has appeared in the January *Nineteenth Century*, which tends greatly to strengthen the argument on this special point. It is called “A thousand mouths more every day,” and his lordship states that one thousand more mouths to feed are daily added to the population. As in a family, so in a nation; when the numbers increase, economy must be worked out in some direction, unless there is an adequate increase in the provision, and we have no sign that such

increase is the case in England at present. We had better, therefore, look to our methods of using with skill and thrift what does lie within our reach. It is calculated that sixty per cent. of a working man's wages goes in food, hence anything that in this direction promotes economy, combined with comfort and nutrition, must be a distinct national gain.

I have elsewhere connected with this subject the Archbishop of York's definition of "sweating" as an attempt to organise, and make productive, labour which otherwise would be worth no wage at all. We are made aware of the large number of women and girls groaning under a system that trades upon their incapacity, but perhaps we are not equally cognisant of the number who are not so fortunate as to be "sweated," but drag on an existence of haphazard; strong and able to work, but incapable of anything beyond the very roughest employments, of which the supply is not as unlimited as the applicants seem to believe, and the occupations just requiring a little skill, and perhaps a little thought, go a-begging, while women starve for want of remunerative labour. If, after eighteen years of enforced education, so many women are still to be found without capacity for taking up these womanly employments when workers are so often in demand, there must be something wrong somewhere; and I do not think we shall be going out of our way to find fault, if we look for the mistake at the root of our social structure, and accredit our present system of elementary education with some of this incapacity.

I will, therefore, this evening limit my remarks on domestic education to its development in the elementary schools, where our girls' powers are developed, and their habits, tastes, and ambitions are formed.

I use the word *ambitions*, not in the sense of forming

plans in life which they aim at accomplishing, but more simply in the sense of the subjects in which, as school-girls, they are proud to be found proficient, and in which they are glad to shew skill at home.

The tendency of the present line of education is to give the idea that domestic work has no connection with intellectual acquirements, and is therefore somewhat derogatory, so that head and hands are not expected to co-operate to make home management a success. It is to the cultivation of their ambitions towards excellence in this direction that I would fain look for reform in girls' education.

There is now a very general consensus of opinion that, excellent as our system of elementary education may be in many ways, it has not hitherto been quite suited to the needs of the people for whom it is devised. It has not been based on lines adapted to arouse their general intelligence, or develop their thinking faculties, or prepare them for success in their immediate future.

Quite recently, in this very room, Sir Henry Roscoe gave it as his opinion, "that boys and girls leave school with only a varnish of education," and the experiences of our recreative evening classes for continued education betray how very soon this varnish is rubbed off in the wear and tear of life. By the time they reach these classes, most of the knowledge has flown; the power of thinking does not seem ever to have been acquired, and but little idea has entered their minds that their book-learning has anything to do with the active life around them.

Some of these experiences would be ludicrous, were it not that the loss has too deteriorating an effect to allow even of a smile.

One brief sentence in the protest against examination that appeared in the *Nineteenth Century* last autumn gives the key to the secret of this vanishing power of elementary

education. "The education the children at present receive, and the life they have to live, *are as matters separated by a great gulf*;" and until means are found and steps are taken to bridge over this gulf, and produce what Sir Lyon Playfair calls "trained intelligence," the same result will be repeated with each new set of scholars.

It is most difficult for people of cultivation to realise how much of it depends upon the "line upon line" effect of general surroundings, and how hard it is for these children to ponder over and digest their book-learning when it is so unconnected with anything that they see and hear around them.

And specially is this the case with the girls, whose after life is chiefly in the direction of home management, where head and hands could co-operate to the infinite benefit of all about them; whereas now, as a rule, the hands struggle on without any of the efficient aid the head might so well render. And the lookers on cry out, "Where is the good of all this schooling?"

I do not for a moment forget the oft repeated argument that a good *general* education is the true basis for the life structure, but I also remember that in most instances these girls will be called upon, either in their own homes or elsewhere, to carry out this domestic management in one, or even all of its branches, almost *immediately* as they leave school, without any leisure to chew the cud of knowledge, with no direction as to how to join mind and matter in the work before them, and worst of all, with no ambition to excel in such a minor matter as domestic life. Nothing in their school life has led up to it, and one rather troublesome result of the increasing appreciation in which schooling is now held is, that whatever is not taught in school is not worth learning. How much this sentiment tends to widen the gulf between school and life can only be appreciated by those who have to suffer from it.

Now domestic training comes in here as the bridge that can span over this gulf and connect intellectual study with practical detail. Glorified as a code subject, with a place in the time table and a government grant, manual instruction is acceptable to the parents, and is as delightful to the girls as practical experiment is to a science student whose researches have hitherto been confined to book study only.

In fact, taught as it is now, with the reasonableness, the accuracy, and the completeness of a science, it has the same good mental effect upon girls that mechanics and other practical sciences are considered to have upon boys in teaching them to think, and to understand and appreciate natural forces, with the additional advantage that such instruction is certain to be of economic value in after life, and is capable of immediate application.

The two forms in which we recommend domestic education in day elementary schools are—practical cookery and laundry work.

Sewing is not included here, as, happily, it has for some years been classed as an essential subject, and is taught with more or less efficiency in every girl's school. But I cannot help remarking that if elementary education is to fulfil the design of the Education Department, as expressed in the Final Report of the Royal Commission, and "give such instruction to the scholars in general as will best fit them to fulfil the *ordinary* duties of life to which they are *most likely* to be called," cookery might be classed as essential even before sewing, inasmuch as the clothing of a family *can* be bought, in fact *is* bought to a large extent by the very poorest people, but *no amount of money can buy* a well ordered home and the thrifty management of its resources.

Both cookery and laundry work are matters with which almost every girl will have subsequently to deal, even though

she were never called upon to show efficiency in reading and writing, and they are perfectly practicable in any of the modern schools, and even in the old-fashioned ones with a little extra arrangement. For the first reason therefore they will take the same natural place in after life as the three Rs, and should cease to be regarded as technical in the ordinary acceptance of that term; and in the second they recommend themselves by their facility of attainment to all school managers who have the real interest of their girls at heart, and are anxious to make them *capable women* as well as clever scholars. Where cookery has already been introduced it has had a distinct effect in making the pupils more perceptibly intelligent in their other studies, and we need only to point out what a relief practical work is to the brain, calling into healthy action the stores of intellectual knowledge laid up there. Anyone who sees a class of girls at work over their cookery, with bright countenance and eager manner, evidently enjoying the weighing and measuring and the counting up of the cost, will feel that we are here at least on the right lines of education, and that instead of being a strain on their minds this is a wise and productive application of the mental acquirements of the preceding years of school life. It is not enough to teach these girls *how to do* things, they are taught the reason of every practical process, so that they gain an intelligent understanding of the needs of life, and wisdom in the selection of the natural resources to be employed in supplying them. Much attention is purposely given to instruction in the art of choosing suitable, nourishing, and at the same time economical articles of food, as not unfrequently the smallest incomes have to be stretched to meet the need of the largest families.

If the public voice is of any value, the rapidity with which such practical instruction has gained the approval

of educationists will be a strong argument in its support. Only in 1870, the year when the great Education Act was passed, Mr. S. Smiles wrote from France an article in *Good Words*, remarking on the careful economy and skill in cookery of the French women, who wasted nothing. Then he adds, "Cooking seems to be one of the lost arts of England, . . . and our people, through want of knowledge, probably *waste* more food than would sustain another nation. But in the great system of National Education *no one dreams of including as a branch of it, skill in the preparation and economy in the use of food.*" The best comment I can make on this, is to mention that it is stated in the report of the Privy Council on Education for 1887, that the government grant for cookery was paid on account of more than thirty thousand girls, a total that had been annually rising from 1883, when the first grants were made. The steps by which this good result has been obtained are now things of the past.

The addition of laundry work, as a suitable branch of domestic education has been only quite recently suggested, and on that account failed to obtain the same recommendation as cookery from the Royal Commission in their Final Report, though warmly supported by individual members; but its success in the schools where it has been tried shows it to be eminently fitted to serve the purpose of a combined scientific and practical training for girls, and justifies the efforts now being set on foot to procure for it a place in the Code, and a suitable government grant to encourage its adoption in day schools.*

* Since this paper was read, the London School Board has received from the Drapers' Company a gift of £250, for the purpose of trying the experiment of introducing laundry work into their schools, and are now preparing to open five centres for the purpose. The efforts already made in Liverpool have been under the auspices of the Committee of the Liverpool School of Cookery.

In such work, girls come to realise cause and effect. They understand the value of book-learning when they see the power it gives them of dealing efficiently with the materials and forces of nature, with the calls and the incidents of life, and much intelligence is developed when they perceive the difference between good and bad modes of working, and are brought into the actual practice of scientific methods.

With the echoes of the recent cry of over-pressure still sounding in our ears, it is natural that a difficulty should arise in many minds as to how these practical subjects can be taken up when the curriculum is already overfull.

And it is here that we must expect to meet with differences of opinion, perhaps even some real opposition, not from any objection to domestic education itself, but from the old fear, which constantly comes up under a new face, of lowering the mental powers of girls by differentiating their education from that of boys, or of making girls less intellectual, if their whole school life is not spent in cramming them with facts which pass out from their minds quicker even than they were forced in.

At a large meeting of elementary school teachers, gathered to discuss the cookery question, one master rose to speak against it lest it should take time from other subjects, and he drew a pitiful picture of the feelings of a working man who should come home to supper and be seated down with a wife incapable of discussing with him difficult questions of arithmetic. Perhaps I should add that the speaker was a special teacher of arithmetic.

I would propose, even urge, that much *less* time, if any at all, should be given to "English" in the form of grammar and analysis, and to advanced arithmetic—such as is designated as "useless" by the Royal Commission on the Education Acts.

I am quite aware of the arguments brought forward in

support of these subjects, that they are a good mental training, and are important in teaching the children to think. This, however, is exactly what I am convinced they do *not* do; that the reasoning is rarely grasped by the children, and the subjects are only learnt in parrot fashion. I will give one illustration which is a very fair sample of many experiences. A class of eighty children was examined in fourth standard grammar. They had been well taught, and answered well the questions, which were, of course, founded on the lessons they had received. The inspector was much pleased, and in cheerful tones said, "Now, children, make me a correct sentence of four words on the rules about which you have just answered." I think it will surprise some here to learn how many of those eighty little minds had grasped the meaning of the grammatical rules and terms in which they appeared such experts. *Not one*, of her own free thought, could frame a simple sentence of four words accurately. Left to themselves, very many of them would probably have uttered quite correct sentences from what the eye had seen while reading, or the ear heard in daily talk, but never from any rules of grammar, however glibly they might be poured forth in examinations. As to the advanced arithmetic, that is also learnt parrotwise, and by it the girls are carried so far, and so rapidly, past the simpler rules and principles that the whole subject becomes useless to them, and it is said in the Final Report of the Royal Commission that "although girls may pass in the subject of arithmetic, yet they are often unable to apply their knowledge to the simplest practical use, such as making out little accounts for their parents, or calculating the interest on small sums in a post office savings bank." With such evidence before us, much cannot be said on behalf of the value of grammar and advanced arithmetic in training the minds of the children, and teaching them to think, and we cannot but believe

that this object is better attained by giving them the opportunity, under skilled instruction, of bringing head and hand into practical co-operation, and learning to *do* one or two things so well and efficiently as to be a power in their hands in all after life.

This is considered by some a too utilitarian view of education, but with the terrible difficulty of the unemployed before us, it is a wise, if not the best, view to take, unless we mean to be *content* to see people starving around us and offer them books as consolation. Stones for bread they will surely call it.

Again, it is objected that education is meant to give high and noble ideas and raise the tastes of the people. True, but to make home the most comfortable and attractive of all spots is one of the noblest ideas a housewife can conceive. And as to the tastes of the people, nothing hinders intellectual culture more than the drunkenness which there is every reason to hope this important domestic management will largely tend to cure.

The late Mr. Christopher Bushell, a magistrate, and also a keen and liberal supporter of cookery in elementary schools, used to say that most of the cases which came before him were the result of quarrels which arose either from food not being properly prepared, or from its not being provided at all. Provide well ordered homes and we may hope to see a more literary public.

The due consideration of these questions is the duty of all sections of the community, inasmuch as so many now by the School Board vote, and others as promoters of elementary schools in various ways, take upon themselves a share in the guidance of public elementary education, and are to that extent reponsible for the results—responsible to the parents, responsible to the children, and responsible to the nation at large. But specially so to the parents, as we have to a great

degree taken out of their hands, and done it of course for good, the preparation that their children shall go through for their life's work.

It is sometimes asked if girls at school are not too young to appreciate such instruction. But when girls of *eleven* even have to keep house it is surely not too early to learn how to do so efficiently?

One of the "Cooking Scholarships" that Mr. S. Smith, M.P., placed in the gift of the committee of the Liverpool School of Cookery, was awarded to a girl of twelve years of age. The committee decided that she had better wait a year or two and be more of an age to value it. The little girl came to the committee in tears, and begged to be allowed to have her advanced lessons *at once*, as her mother was just dead and she was to keep house for her father and family, and the knowledge which such instruction would give her would be such a help in fulfilling that duty. Of course, she was allowed to have her way. Those who know much of the life of the working people know how early responsibility is laid upon many of them, and know also that girls are averse to entering service, very often because they have the ignorant idea that domestic work can be only drudgery and hardship.

In page 213 of the "Final Report" of the Royal Commission on Education, under the heading of "Conclusions," we find this very explicit *conclusion*, "We desire to secure for the children in the public elementary schools the best and most thorough instruction in secular subjects, suitable to their years, *and in harmony with the requirements of their future life.*"

Knowing as we do the immediate future of probably 90 per cent. at least of the girls in these schools (which we have already discussed), we are called upon in calm reason to decide whether the *applied* arts or science, whichever we

like to call them, named above as domestic education, *or* grammar, advanced arithmetic, French, and so forth, are best calculated to accomplish the aim of these experts in elementary education, and fit our school girls to fulfil their part in life, and succeed in the struggle for existence which, more and more, seems likely to be the *role* of the coming generation.

THE FAITH OF AN EVOLUTIONIST:

BEING NOTES ON PART THE THIRD OF A WORK BY
E. P. POWELL, OF NEW YORK, ENTITLED *OUR HEREDITY
FROM GOD*.

BY THE REV. H. H. HIGGINS, M.A.

The quotations from Mr. Powell's book indicate by a number the page on which they may in substance be found, but are not generally placed within inverted commas, as necessarily being variously abbreviated, or in other respects slightly modified.

MANY thoughtful minds are painfully impressed by the apparent consequences of the doctrine of Heredity. No other branch of modern science falls with such crushing weight upon a man's thoughts of his own existence as an individual, and of his spontaneity as an agent.

We know that there are intellects so constituted as to be ready to give up individuality and spontaneity if, only, they could be certain to be mechanically kept from going wrong ; but, to ordinary minds, such a conception proves to be repulsive in the highest degree. To have no self to devote, heart and soul, to a worthy object ; and no choice in the matter, if one had ; that what a friend could possess in us would *not* be a free sympathising spirit, but the equivalent of a bit of rack and pinion wheel-work, ought to be intolerable unless it be true. Certain competent writers have felt this deeply, and have set themselves to enquire whether, amidst the rush of knowledge attending the dawn of evolution in Biology, contracted views of life and its directive forces may not have attained undue prominence, to the great disparagement and hindrance of real science, and to the intense discomfort of thousands of cultured minds. In the foremost rank of such writers, if not first,

may be placed John Fiske of America, author of *Outlines of Cosmic Philosophy, based on the Doctrine of Evolution*, 2 vols., 1874. I have seen nothing to supersede this work; but a more recent volume, of about 400 pages, has appeared on *Our Heredity from God*, by E. P. Powell, also of America; and it is with the purpose of submitting to you some account of the plan and contents of this remarkable book that I have given prominence to its title, as indicating the subject of my paper. The work has reached a third edition in America, but is hardly known at all in England. Mr. Powell resides on a demesne of considerable extent, in a beautiful portion of the State of New York, the whole of the estate being devoted to horticulture. Here he at once cultivates plants from all parts of the world, and receives inspiration expressed through a fresh, open-air style of literary composition which, with all its imperfections, is the vehicle for thoughts such as the age in which he lives should receive with sympathy and respect. That you will agree with me in this is, I confess, not beyond my hopes or expectations.

The scope of Mr. Powell's work is indicated by its title. Heredity is, no doubt, a natural law. But it would be unreasonable and false to argue from it as if it were an edict imposed from without. Heredity has no existence apart from the universal order which affects its action as the life of an organism influences its functions. To the establishment of a higher conception of Heredity the entire volume is devoted.

The last of the three sections into which the book is divided takes up evolution after Man is reached. Having devoted nearly two hundred pages to illustrations of the peopling of the world by the development of life, the author proceeds, in a chapter on "Co-operation in Evolution," to show the wonderful unity of the process, whether exhibited in matters physical or psychical.

LECTURE I. CO-OPERATION IN EVOLUTION.

(Page 191. I know nothing, says Mr. Powell, in the history of evolution so pleasant to dwell upon as the social element. For in reality, from the very outset, there has not been a mere selfish individual struggle to exist, but there has been co-operation and helpfulness in every stage of the ferment, between all creatures and all forms of life, and even between the unconscious forces.)

The knowledge of such co-operation, if it can be shewn, certainly constitutes a wondrous advance on the evolution of the schools, in the days when the *Origin of Species* first came out. I can never forget the horror produced in my own mind by the idea that Nature was one huge battle of life—one universal reckless struggle for existence. The statement, however, contained a measure of truth. Not, as we now know, such a measure as was then assumed—though the struggle and the bloodshed were there sure enough—and the story was well told. But there was another story which should have been inseparable, and *that* was not told; for it seemed to support teleology, and teleology was then confidently assigned to the camp of the opponents of science. Let us not hastily condemn partial statements on either side, at an epoch when natural selection seemed to sweep like a flood over the whole field of view in Biology. In such a crisis I regret, but wonder not, that the teleology of those days involved a stumbling-block to scientific minds. But an amazing change has been developed in this respect. The teleology advocated by Mr. Powell is, I believe, of that higher kind, concerning which Professor Huxley thus writes:—

“ Perhaps the most remarkable service to the philosophy of biology rendered by Mr. Darwin is the reconciliation of teleology and morphology, and the explanation of the facts of both, which his views

offer. . . . It is necessary to remember that there is a wider teleology which is not touched by the doctrine of evolution, but is actually based upon the fundamental proposition of evolution." (Huxley, in *Life of Darwin*, vol. iii, page 197.)

One of the principal spheres illustrating co-operation in evolution is that of automatic, or reflex action, to which allusion has been already made, as assumed to dominate even in the most exalted powers of the human mind. For example, affection, pity, hope, awe, imagination, have been asserted to be mere cerebral symptoms; and volition has been compared to the sound of a clock bell, indicating the position of the works within.

Exaggerated as such statements may be, I am by no means sure that Mr. Powell would oppose them absolutely: at all events *that* would not be his method of confuting the pan-mechanical theory. Rather, he would urge that from the beginning, and in the lowest forms of life, there has always been, associated with automatic action, a psyche, a *zel seele*, a bios; and that the evolution of the two has run on together in harmony and entire co-operation. With this, as we know, Prof. Haeckel now agrees.*

Herein lies the secret of the book. Physics no longer appear to be at variance with psychology—not that the former has swallowed up the latter, but because both are found to be too vast, too faithful allies, from the most ancient times; and, both of them, too plainly essential parts of the cosmos, for the one to be the sepulchre of the other.

Of Mr. Powell's many illustrations of co-operation in evolution, connected with automatic action, a few only can be cited, and these much abbreviated. Says our author—whatever we learn to do perfectly, for the most part we do automatically. We breathe—our blood circulates—we as-

* *Monograph of the Radiolarians collected in the "Challenger"* (Haeckel). Introduction, p. cxxviii.

simulate our food—automatically. To us, all this comes as a matter of course. We say that we do these things naturally, and we say rightly; but we forget how much is meant by the word “naturally”—what a measureless amount of evolution and heredity must be involved in the perfect accomplishment of our most ordinary functions.

(Page 195. It took ages to establish a heart. Lower creatures had this to aim at and to do, and then it was done for them and all those that came after them, with need only of modification through environment and by development.)

But the first heart was a co-operative work, physical and psychical, in a process leading to the possibility of a higher life, unattainable with no better organ of circulation than sufficed for the laboured systole and diastole of an animalcule.

The author believes that—“Take it all in all, ninety-nine hundredths of all a man does, he does automatically.” What wondrous relief and freedom of action is thus afforded to the highest reasoning and reflective powers. This *psychical relief*, as well as organic excellence, is pointed to, when eyes and lungs and a nervous system were initiated.

Equally is co-operation shewn in the preservation of acquired advantages by the active principle of heredity. All the higher animals, in the embryo state, before they are born, pass successively through forms resembling lower creatures from which they have ascended. What is to preserve the helpless embryo from sinister maternal influences, or carry it safely through its due number of philogenetic stages, but the strong hand of heredity which moulds with tender grasp the unconscious germ.

But the evolution of which heredity is the chief minister, is not a Bellona caring only to bestow on one vassal sharp fangs, and on another swiftness of foot to escape them. If less conspicuously, yet not less really, does primitive evolution declare for the higher and gentler and nobler capacities

of life. The lowest forms of organisms are destitute of sex. Then, by slow gradations, arose that astonishing division of the unit into male and female, the fountain head of love and poetry and sense of beauty.

In the outset of life, reproduction involved no long continued relation between parent and offspring. In the invertebrates, and in fishes, some commencement was made in this direction: in birds there was further development of parental intercourse; but it was transient. Then came the mammals with their intense affection for their young, which was brave and altruistic, but brief, not lasting for a year; till we reach the quadrumana having a greatly lengthened period of infancy and a dependence lasting, sometimes, even for years. It is needless to point out whither all this was leading. In man it was to a greatly prolonged infancy, to a dependence which extended to the time of youth, to a love that knows no period of limitation; and to the necessity for a permanent home.

(Page 198. So from the very first the order grew towards the home life; in which the co-operation of the members of a household fulfils the functions of a highly complex life, as in a coral or a sponge. Out of the thought of home has grown every element of social progress. The family is the unit of human existence. All civilization is the unfolding of the words father, mother, child.)

The ascent from reproduction by spontaneous fission, to the same function as involving the human family and home, is only one of the lines illustrating co-operation in evolution. Others must be omitted; but the lecturer's concluding words are as follows.

(Page 215. It has been my purpose in this lecture to show that, from the very outset, evolution has implied something besides a mere brute struggle for existence; that it involved a mutual helpfulness and co-operation for a common

good ; and that Nature stood pledged in the cell to create a moral intelligence, and in every cataclysm to establish as the ultimate law "On earth peace, good-will to men."

It has also been my purpose to bring out the duality of nature, as in earlier lectures the unity ; but, as we see, there is no unity except in the multifold, and that the multifold can exist only in unity.)

LECTURE II. DRIVING THE GOLDEN SPIKES.

This somewhat fanciful title was suggested to the lecturer by an incident that occurred "when the Northern Pacific Railroad was completed. President Villard then made the event memorable by driving a spike of gold where the last rail joined the two extremes." On this Mr. Powell remarks that "the evolution of humanity has been signalized at well defined points of progress by its golden spikes."

The lecturer was not likely to limit the advance of the human race to development in one direction. Arts, sciences, inventions, distribution, discoveries, the forming of nations—all these and other lines of progress afford striking examples of periodicity. Again we can follow only one—that in which law and religion are combined.

"Religions, from the outset, have had approximately a period of about five hundred years. Brahminism, itself a reformation of an antecedent faith, burst out simultaneously over Asia about 2000 B.C. The law-giving by Manu in Southern Asia, by Tschow in Eastern Asia, and by Moses in Western Asia was spontaneous and simultaneous about 1400 and 1500 B.C. The song and psalm era of David and Homer was about 1000 B.C. Buddha in India, Confucius in China, Socrates in Greece, flashed forth about 500 B.C. Five hundred years later, Jesus, concentrating all lines of evolution, symbolized the cosmopolitan unity of all future development. 500 to 600 A.D. the papacy was established, and

Mohammed began his crusade of monotheism. 1000 A.D. the completed hierarchy was established by Hildebrand: 1500 A.D. the reformation by Luther was kindled. As we near 2000, it seems certain that we are approaching the culmination and establishment of the age of Reason as the basis of Faith."

LECTURE III. JESUS THE CHRIST OF EVOLUTION.

To the majority of thoughtful Christians who have not been accustomed to regard evolution with feelings of respect and reverence, and who, perhaps, can scarcely realize the possibility of doing so, it may be painful to hear the Founder of Christianity spoken of as the Christ of Evolution.

A moment's reflection must, however, render it plain that Jesus held a most distinguished position in the secular history of the world and of mankind; and that evolution claims an interest in every event, great or small, physical or psychical. Unless, therefore, he is prepared to reject modern science altogether, the Christian should welcome any aspect in which Christ is presented, so far as it represents additional features in the fulness of his character.

The lecturer follows a consistent course, or he would not be worth hearing; and in doing this he urges, (page 243, that a false conception of Jesus is a necessity inevitable to those who look on the world as, in natural goodness, a wreck, and on man as the mere flotsam and jetsam of a moral breakdown of divine purpose. On such a platform, an unselfishly great character, with heroic proportions, is a miraculous product. He cannot be natural, for the natural man is bad. On the basis that typical humanity is not a degenerate product of nature, but that it has, from its earliest dawn, risen in intellectual and moral power; that the race is still rising, and is to rise for an indefinite future—the conclusion may reasonably be that Jesus is the son of Man, pre-emi-

nently gifted with a genius for human sympathy, a man who above all things loved human nature. Such *is* the historic Christ. Of the mystical Christ it is asserted, on authority presumed to be infallible, that he is to end his career of beneficence, as judge of all flesh, even of those who have never felt his love or heard his name.)

(Page 246. The facts of evolution bearing on the position of Jesus may be thus briefly summed up. Man had existed on the globe for a period of vast length, reaching back to the glacial epoch, when his structure and function were anthropoid, but not strictly human. His career was, at the first, like that of animals, a struggle for existence. Anything like a mental career, or a moral development, he did not have until within the last ten thousand years. He made no history for all the earlier period. He built no cities, had no ships, invented no written language, and, for the most part, had no language at all.)

(Page 249. Five thousand years B.C. commerce had led to tribal life; had built ships, domesticated horses and camels and cows, and built great cities. Someone, about 2000 years before Jesus, had the grandest idea of all. His idea was an alphabet of signs to represent vocal sounds. So a bit of bark, or the face of a rock, could talk as a man himself could talk; only addressing the eyes instead of the ears.)

(Page 250. Eight hundred years before Jesus, thought began to cumulate in ganglia or nuclei. Literature and art broke away from the priests. Philosophy was born in Greece and Asia Minor. Glorious day for mind! Thales of Miletus was the first of a grand succession of thinkers. Language was growing richer, and so men had intellectual tools to work with. Five hundred years before Jesus, things were red-hot. The beautiful rhythm of the Greek language flowed in harmony with the flute as its orators addressed the crowded populace. Socrates came, then Plato, Aristotle, Xenophon,

Pericles. What an age it was, when a dot in the Ægean Sea begat a republic, philosophy, and the fine arts. In India, about the same time, was born Buddha, the prince of peace, and, soon after, Asoka, the divinest of kings. In China, Confucius appeared, and Laotze, the more radical. Everywhere in all the world mind was showing its marvellous capabilities; thought was rising to supremacy.)

(Page 251. The old struggle with brute force was over but a mightier contest was at hand. Man must now conquer himself. Would not the gods help in this moral battle, as they had been used to help in the battling of armies? The womb of humanity laboured. It brought forth the victory of peace and hope and love. Evolution closed its first volume and opened the second, with Christ as its frontispiece.)

At such an era to be a Jew was to have the advantage over all other races. No other race could produce an example capable of subordinating all inferior ties to his position as the "Son of Man." (Page 253. Hillel and Gamaliel had reached a wide philanthropy, something better than patriotism. Jesus had what they had, but he had, as no one before him had, sympathy for man as man. A Greek would have tried to argue the world into a higher life. A Hindoo would have expected the golden life only by way of meditations and fastings. A Roman would have used law to compel righteousness. A Jew only, by heredity, was prompted to discern the supreme power of love and hope. Whatever else a Jew is, he is always a hoper. And a man that hopes always is an upward looker. Jesus was the incarnation of this national tendency.) (Page 257. A true estimate of Jesus must take into account that he was a healer. I do not desire to take you into the realm of the extra-natural. The psychical facts to which I refer are fully as natural as the simplest physical facts. Sympathy always

heals. It is the typical power of the age ahead, as opposed to the age behind. Jesus was a prophet of the psychic age ; a possessor of vast psychic power. It was in him that rich subtle power of help, that charm and beauty of life which, higher than an angel's visit, comes to us when we meet a healthy body charged with a pure mind. His *presence* was sweet and health-giving.)

I can only refer to one other of the lecturer's remarks, but it is one that is very characteristic of Mr. Powell's habits and style of thought.

(Page 253. Jesus was a man of the people ; not a priest, nor a prince, nor a noble of any sort. His blood was fresh and virile. In horticulture, when we labour for a new advance in any fruit, we do not take the highest product of cultivation to work from ; at least we rarely succeed in getting a higher evolution from that which already is remarkably developed ; we go back to fresh stock and make a new start. Nature always does this. From the standpoint of evolution Jesus does not appear as the incarnation of a national God, the Jehovah of armies ; but far more than that, as the incarnation of the Supreme Life, vivifying measureless past years of the life of man. Yes, more, as the incarnation of all life, from its dawn upon the earth ; then and now, knocking at the golden gate of a higher humanity.)

Feeling that I am far from having done justice to Mr. Powell's lecture on "Jesus as the Christ of Evolution," I am still hopeful of your consent to the deep interest abiding in the witness which connects the life, character, and ministry of Christ, with his place in evolution and history.

LECTURE IV. IS THE GOLDEN RULE WORKABLE ?

This enquiry seems to be suggested for the purpose of placing in a strong light the main contention of the whole

work—namely, that progress, and not perfection, is the goal in Evolution. This is a position which needs not proof, but thought. A state of society in which the golden rule was universally observed, would leave nothing ethically to be desired, and evolution in morals would be at an end, its place being supplied by automatic action.

The golden rule is on all hands admitted to be the model of a perfect morality. But whilst investigating the schemes by which the various religions of the world have professed to further its practice, the author becomes embittered and unjust. "The world," he says, "contains not less than fifty millions of priests, monks, and medicine men, whose business it is to sustain notions and customs that would quietly, by the common-sense of mankind, be consigned to the keeping of history." "Whoever, in any generation, has been the best expression of the golden rule has met with obloquy, if not with the fate of Jesus, Socrates, and Lincoln."

These are not words of measured exactness, but rather of passionate indignation. He, himself, is sensible of being carried away. (Page 281. Sewing women are compelled to see their children grow up in the streets on garbage, and become as morally foul as the barrels are foul out of which they rake their crusts. Every day, almost every hour of every day, an unfortunate gives up the conflict and kills himself, and possibly his family—elbowed down, and out. Elbows govern the system. When one writes of these things the ink is no longer ink—it is gall.)

It will not be necessary for me closely to follow the lecturer in an utterance to which it must have been sad to listen. Yet it is pleasant to mark how fearlessly he confronts the appalling picture drawn, without any hesitation as to duty, or as to hope. It is not for the Evolutionist to acquiesce in human misery because of a chance, revealed to a few, of perfect

rest in the world to come. He, too, looks for an undying lot; but his present part is to contend manfully against ignorance and wretchedness; and in so doing he is a fellow-worker in a glorious process, which by heredity from a living atom, into and through the brute, has developed intelligence and rightness, because our heredity is from God.

I cannot think that, in this lecture, Mr. Powell is himself. He submits to be led as if fascinated by the depth and extent of the dark side; perhaps because he starts with the object of showing *how* impracticable is the sweet and reasonable golden rule. Sure we may be, nevertheless, that we have seen some dispositions very endearing because they have been permeated by it. Entire self-renunciation would not fulfil the golden rule, which itself appeals to our sense of the way in which we like to be treated by others.

It is an ever to be remembered feature in the life of man that the removal of certain disadvantages would often involve the loss of greater benefits. If pain were abolished we should soon be miserable creatures, if we could exist at all, for we have no other safeguard than pain against injuring ourselves in countless ways. The goal is diminution and alleviation. The lecturer descants so eloquently on the old pessimistic maxim: "Childhood and youth are vanity," that our little sons and daughters might feel themselves a much ill-used race. But he dries their eyes and wins their smiles by asking—What if childhood could be abolished? With it would also go the glory of our adult life.

For what would the world be

If the children were no more?

We should dread the desert behind us

More than the dark before.

Both sides equally, the evil and the good, confirm the argument that the present is a state of imperfection, and that

the goal of evolution is progress. Says the author—"Woe be to us when we become perfect!" In another form this is the well known choice of Lessing, who preferred the pursuit of knowledge to the full possession of it. We are assured, (p. 287, I do not intend to teach pessimism; far from it, I believe matters are growing better; but they were not a perfect adjustment at the outset.) Mr. Powell is here on ground where he cannot even for an instant dismiss polemics with opponents whose glory it is to preserve unchanged and inviolate throughout all ages "the faith once delivered to the saints." Reconciliation here seems hopeless. Let us pass on to consider some of his less troubled thoughts.

LECTURE V. THE EYES OF EVOLUTION IN ITS FOREHEAD.

(Page 289. We have so far studied the past and the present; we turn now to the future. Is it a closed book? I think not. In proportion to our accumulated knowledge of the laws of evolution, we can foresee what is before us, but as yet is not fulfilled. The men of ten thousand years ago were not in body or in mind, the same kind of men as exist to day; it is highly probable that the men who may exist a long period hence will be still further removed from the primitive anthropoids. The changes that have gone on have followed ascertainable laws. The bones of the skull have increased in number, the area of brain surface has quadrupled, the tail has aborted,* and these changes have been accomplished by laws of exact causation. Nothing has happened fortuitously, nor was there an arbitrary change at any point. Following these ascertained purposes and tendencies of evolution, we are able to look into the future.)

Such is the significance of the somewhat enigmatical title of this lecture, which is mainly a setting forth of a

* The caudal vetebræ in *Bimana* have not yet entirely disappeared, it would have been safer for us if they had.

series of future events, to be anticipated with more or less of probability. In our physical structure, future modifications seem to be confidently expected. (Page 291. The plasticity of human development is in brain, voice, and hands; and in the increase and education of our senses. There is no chance of a better heart or lungs, or for the most part any improvement of that large part of us that has become automatic and unconsciously operative.) (Page 293. Sir William Thompson suggests that we are acquiring a new function of sensation, which he terms the electric. Is it possible to develop a new sense organ? or a composite sense? Is what we call our psychical life, at present crudely known as mind-reading, telepathy, hypnotism, leading us to a new and subtle relation to the universe? Certainly we have come into the electric age, and our needs are also new.) (Page 296. Professor Cope figures the coming man of higher races as distinguished by twelve teeth in either jaw, or twenty-four in all. Our food must hereafter partake of the refining influences of culture.) Passing from physical to intellectual growth, the author is not sanguine of advancement in mental power, which, as exhibited in England to-day, he does not regard as superior to that of Athens in the days of Thales or Pericles. (Page 299. While we cannot anticipate any large increase of brain power for the future, science applied to education will, no doubt, produce an average of intellectual power that will obliterate first barbarism, and then superstition, and finally vice.)

The social evolution of the future is dwelt upon at considerable length, especially with reference to two of its characters. It will preeminently be cosmopolitan, and it will also be the result of allowing to woman the free exercise of her functions.

Such predictions are strikingly illustrative of the title chosen for the lecture. For from what other source than

that which reveals unity in nature, could spring thoughts of a common interest binding together all the nations of the world? It is the spirit of the prophet as opposed to the spirit of the priest. And as to the franchise of women, chivalry was very well for the queen of beauty on gala days; but evolution declares a full recognition of the unity of the twain, the man and the woman, under all circumstances and at all times; not because of their being man and wife, but because of the co-heredity leading up to their respective conditions, being from God.

The wonder of all wonders is the universal and continuous forecast, running throughout all nature, and rendering it reasonable to speak of the world of to-day as predesigned in the condition of the world ten thousand years ago. "Not so," might reply a mechanicalist opponent. "The world of to-day owes nothing to any world whatever except to the world which existed at the previous moment, and *that* nothing except to the world immediately next preceding."

All of which would be true if there were no life, and no heredity involving laws, whatever they may be, not the laws of mechanics.*

Hence it is no false metaphor to ascribe far-seeing eyes to evolution. Gather the winter bud of a deciduous tree, and examine within. There you will find predictions of a summer that has never yet dawned on the world. It matters not whether the prediction be for six months or for a thousand years. It is teleology of that wider kind which is based on evolution.

LECTURE VI. ETHICS THE AIM OF EVOLUTION.

A brief reference to the course of the argument may here be of service.

* "On the Individuality of Atoms and Molecules." H. H. H., *Proc. Lit. and Phil. Soc. of Liverpool*, 1888.

Lecture I showed, that evolution from the very first included more than a selfish struggle for existence; and that its agencies were co-operative.

Lecture II, on the driving of the golden spikes, pointed out that the progress of evolution has been characterized by well marked periods.

Lecture III directed our thoughts to the historical position held by the founder of Christianity, as the Christ of Evolution.

Lecture IV, on the golden rule; demonstrated that the continuance of evolution implied imperfection.

Lecture V examined how, from the outset, evolution had prospective tendencies thus establishing teleology.

Lecture VI, the present lecture, seeks to show that these tendencies are, in the main, ethical, and favour the good, the beautiful, and the true.

One important omission may have been noticed. I refer to degeneration and its results. A whole lecture is devoted to this subject in an earlier portion of the volume. In passing on to consider the ethical aim of evolution, the severity of nature towards transgressors would occur to some as of primary moral importance. Nature is not less merciful for being inexorable. A slighter penalty, which is inevitable, is more salutary than a tremendous doom which every offender hopes to elude.

On the whole, the deterrent discipline of nature is more conducive to ethics than the penal system of the popular faith. But what, on the other side, can be said of the moral attractions of nature? Has evolution any claims on the heart?

Evolution is a name for a way, an order, a method, a channel. But when even a special channel or instrument brings us a satisfaction inexpressibly grateful to us—for so does a home, or a book, or a musical instrument—we

love the senseless thing as if it were a bit of our very selves.

Now evolution, through heredity, has laid the foundation for all that we derive from love ; beginning with the instinctive love of offspring, in an insect or a bird, through the spirit of alliance, active even amongst uncultivated minds, up to the most refined and self-devoted affection ever sung by poets. All has been accomplished at an immeasurable cost of time, involving ages beyond computation, and, apparently, only by overcoming a multitude of difficulties. Surely it is as reasonable to love evolution as it is to love home or a book.

An obvious reply would be—If evolution claim regard for founding love, what must be its due for developing wars, crimes, diseases, famines, catastrophes, and inevitable death ?

It is true that evolution hath so far left us in a manifestly imperfect state ; but, on the other hand, the knowledge of evolution is the only conceivable universal remedy, through its impartial capacity towards the development of a higher life. If our miseries had fallen upon us by the arbitrary stroke of an angry, extra-natural power, remedies would be as diverse and uncertain as the religions of the world.

Again, sensational events occupy men's minds in measure and degree out of all proportion with their due weight, as set in the balance over against events occurring in the ordinary course of nature, and attracting no attention. For example, the myriads of unrecorded happy hours and useful lives, as contrasted with widely published sufferings and much read descriptions of tragic ends.

One other reflection I would submit. Evils, such as catastrophes, wars, calamities, and tyrants, pass away, and the world is not permanently the worse for them. Good inventions, and good lives, confer benefits that endure generation after generation to the end of time. There is a

marked *difference*; and the advantage is given to the good—ethics being the aim of evolution.

A moral world would not of itself prove evolution; but evolution once acknowledged, in a more or less moral world, the ethics therein can only have arisen in close association with heredity.

That evolution makes for beauty goes without saying. There is a million times more beauty in the world than can be attributed to the efficiency of beauty in the struggle for existence.

The lecturer said (page 341, the latest and fullest lesson of evolution is this, that we should cease altogether seeking a moral finality. Some noble souls are ever dropping into the conviction that at last their pilgrimage after truth is ended. A creed that is anything more than a milestone is a blunder. As we find animals on the road, so is man, and ever must be. The rose never will quite reach its ideal. Our hope is that our hope will never be fulfilled; that is, filled full.* We must get accustomed to the truth that the mind, with ever-widening experience, must ever change the horizon of belief.)

LECTURE VII. THE SELF THAT IS HIGHER THAN OURSELVES.

It is a consideration having an important bearing on the reception of this portion of our subject that the minds of ordinary Christians, so far as they are interested in systematic theology, are mainly informed by the Old Testament. Christ's teaching respecting the Father leaves a deep impression, associating the Supreme Being with the blessed life and character then unfolding on the earth. The Father is Christ over again, rather than the possessor of infinite cosmic attributes. In the synoptic gospels, He is the giver

* "Hope that is seen is not hope."

of good gifts to them that ask him, rather than the Creator of all worlds, and the immanent, omnipresent God.

Consequently at a time when, by modern science, our thoughts are irresistibly drawn to the infinite First Cause, we are made sensible that our resources in written theosophy are chiefly found in the Old Testament.

The warlike and wonder-working character distinguishing the Jehovah of the Hebrews, impressed his followers with the conviction that he was a terrible enemy, but an unspeakably valuable and lovable friend. We readily discern here the sources of liability to intellectual and moral error. In their theology, personal or national favours supposed to be heaven-granted to the Jew, were never questioned as to their rightness, whatever might be the injury thereby inflicted on others, *e.g.*, the destruction of the firstborn in Egypt. *That* age has passed away, but its footsteps remain. The God of evolution is too cosmopolitan a power to be our very own God. In the Old Testament Jehovah is said, Exodus xxxiii, 11, to have spoken unto Moses "face to face as a man speaketh unto his friend." Your memories will supply you with a store of parallel passages. Is it a wonder that He, whose path is now seen in the evolution of the universe, is regarded as too vast and diffuse and unapproachable, too closely associated with the cold of infinite space to be of much comfort to us, who have been taught, moreover, that by nature we are at enmity with Him.

Reason suggests that we may safely dismiss the turbulent theosophy of the ancient Hebrews, dismissing the whole hypothesis of strained relations between God and man, adopted from the Old Testament; and, since a living universe must have a psychical source, enquire if evolution can throw any light on so profoundly hidden a subject.

In his long and elaborate discourse on "The self that is higher than ourselves," Mr. Powell proposes to discuss his

subject on a basis which he regards as already in his former lectures sufficiently established. Thus he at once treats as inconceivable, the existence of a living universe and a dead universe. He denies the possibility of a fundamental separation between the organic and the inorganic worlds; and boldly assumes that "Life is a mode of the universe." To myself this expression is not lucid. But it may be intended to be a corollary on the proposition that the Supreme is immanent, held by some of our finest old ecclesiastical writers, and apparently by the author of the 139th Psalm.

It will not therefore be surprising if readers, unprepared to grant these premises, should regard the lecturer as wandering far from his subject.

An endeavour will be made to place before you the nucleus of the lecture; more cannot be attempted.

Light seems to reach the author through the contemplation of an orderly arrangement of modes of existence which he believes to characterize the universe. If his views be reasonable they are worth close attention. We may find them briefly summarized by the author himself on page 355.

- I. Pre-conscious sensibility (mind) is a function of the universe (property).
- II. This pre-organic life eventuates in a comparison of sensations (consciousness)
- III. This becomes a synthetic power in man, and, lo! self-consciousness.
- IV. Unconsciousness, he defines to be a lapse of consciousness, owing to a completed functioning. It is synonymous with our automatic condition. But self-consciousness does not lapse except by degeneration.
- V. Mechanism or organism is the result of purpose and desire in primitive life-stuff, primarily manifested as hunger.

No. 1. Under the names—pre-conscious sensibility, mind, sentience, pre-organic life, primitive life-stuff, protein, protoplasm, &c., &c., are included the universal life energies out of which arise higher modes of existence. Of No. 2, the author says—"Consciousness is not sentience, but the result of a comparison of sensations. It does not lie in the primitive conditions of life, as these appear in the amœba, but where functions have become organic and specialized allowing a comparison of sensations" (page 353).

No. 3 (page 358). Mr. Powell writes—"I have used the term *self-conscious* to indicate that point where reason reaches the concept man. The animals have perceptions but not conceptions. The dog sees a man; he has not the concept—man." (Page 360.) "We know the infinite, then, not in mechanism and instinct, or in consciousness which may lapse into instinct. The conscious being would never know the Infinite any more than would a machine; but having reached self-consciousness, we discover the higher Self. So that the unity which is discerned in organic life, in co-operative functional life, in moral and historical development is enfolded by the sublime concept of infinite Self, intelligent and moral, in whom we live and move and have our being. The amended form is not, "there is one God," but "God is one."

No. 4. The lecturer uses the term "unconsciousness" to denote the condition of activity which we recognise as automatic action. He also calls it lapsed consciousness. "Unconsciousness" is however a word so completely pre-engaged to a wider meaning, that its restriction is scarcely warranted. All creatures of lower organization or of instinct, even such as the ant and the bee, are here regarded as unconscious. Man's activity is chiefly of the unconscious kind. The sphere of conscious activity in which every thing is comparative and relative and imperfect is wonderfully

elevated above the sphere of automatic action, in preparation for self-consciousness.

No. 5. Hunger is rightly emphasized. In the lowest forms of life, as the *Monera*, *Amœba primitiva*, or *Protista*, since the attitudes assumed in hunger are not the results of stimulations conveyed from without by the presence of food materials, but are waitings and watchings prompted from within; this, of all biological phenomena, seems to be the most amazing. No doubt it is the product of heredity; but where can we look for the pedigree, except in molecules and atoms.

The aim of the lecturer, as apprehended by myself, is to account for the idea—"First Cause"—by tracing the evolutionary development of the idea. The lecture is in fact on the philogeny of the idea "Highest Self," which is equivalent to "First Cause." The recognised steps in the progress are but few; and analogy forbids the expectation of finding sharply defined limits between them.

The first stage is the great panorama of life—atomic, molecular, mineral, vegetable, animal, and psychical, as far upwards as the inferior organisms. Then, through organization, comes in the sphere of conscious life, comparing like things, and recognising relativity in all things. Further development still, in man, introduces reason enquiring into the cause of things, cause behind cause, and involving the conception of the infinite. Chief of all arises self-consciousness—the idea of self—capable of psychical and moral elevation and deterioration. Leading to the conception of the Highest Self. Here, prognosticated from the very first, steals over us—like bloom upon fruit, the beauty and the glory of incipient psychical maturity—the consciousness of the self that is higher than ourselves, the infinite source of all self-hood. A process such as this seems to be genuinely distinct from the ordinary

method of inferring from natural laws the existence of a Lawgiver; or from a cosmos, the existence of an orderly Disposer. I find no fault with the soundness of *these* inferences; but the development by evolution of an idea—the highest self—seems to put it on the same basis as any other result of evolution, namely, fact.

LECTURE VIII. THAT LAST ENEMY, DEATH.

Whilst pondering on the title of Mr. Powell's last lecture, it occurred to me that I had been much struck with an article in the *Quarterly Review* on a work by M. Fontenelle, entitled, "The Signs of Death." The perusal seemed as if it must have taken place twelve or fifteen years previously. Under this impression I went to my friend the librarian, Mr. Cowell, who found the paper; but my date was very incorrect—the interval had not been twelve, but forty, years. The interest of the paper had not faded, and a wondrous supplement had since been evolved. M. Fontenelle's orthodox reviewer in the *Quarterly*—rejoicing in a style of composition literary, sensational, and sparkling with the names of illustrious men—and Mr. Powell revelling in a field of modern scientific speculation, as little anticipated half a century ago as the gold fields in Australia—were found joining hands in the happy conclusion that death, as designed by nature, is not an enemy.

Can the question—What are we to think of death?—be seriously affected by such considerations as are supplied by modern science? The preliminary difficulties are of the gravest kind, something like those attending an effort to think in a foreign language. The strong current of heredity, descending through many generations, prompts us to regard the question as already settled from another place and in another manner. Psychological refinements seem almost like trifling with too serious a matter. We cannot yet quite

realise that evolution comes from a source not less sacred than the source of orthodoxy.

It is a vain thing to examine a body of evidence, learned, scientific, and apparently conclusive, only to be told that it is all irrelevant because it cannot be understood by the common people. What the lecturer has to say about death requires all evolution for its postulate. Addressing his sympathisers, he needs no apology ; addressing ourselves, it is as the case may be. His argument is certainly very unfamiliar. After listening to Mr. Powell's thoughts on death in the aspect of evolution, it might perhaps be only natural for the masses to turn away in despair, and perhaps in disgust. Has intelligent common sense any right to do so, or to expect that all reasonings on such subjects as death and immortality should be exhausted in teachings founded on the faith once, and long ago, delivered to the saints? The profound and universal importance of a subject is no ground wherefore its discussion should be limited to fields familiar to every one. The common people—the term is used seriously and with the highest respect—have their own way of coming to a decision on the deepest questions. Often their conclusion is the best which they are capable of entertaining in their present mental condition ; and it may be for them both suitable and wholesome. A large minority, however, have come to be dissatisfied : are they to turn away from suggestions demanding wider knowledge and deeper thought, simply because such considerations are palpably unsuited for the masses, who are not discontented or in difficulty? One of the most needful lessons in the present day, is the high value of imperfect creeds to their respective believers.

It is now for us to ask the lecturer his reasons, as an evolutionist, for believing in a life after death.

1. *The Purpose in Evolution is fulfilled in Man : progress, not perfection, being the goal.*

(Page 377. The more we discover of the unknown, the more we find it possessed of the same laws as the known. The spectroscope confirms the telescope that all globes are of one system, and of one substance, having one law.* Nor can we discover any flaw in our conviction that honour and truth are the same everywhere; that character, like energy, is cosmical. . . . The aim of purpose has been ethical; it has been steadily fulfilling itself, and it may ever be fulfilling itself in man.)

2. *Man's place in nature.*

(Page 381. The question therefore becomes this—whether in evolution *that* being has been reached which can in perpetuity be adapted to new and wider environments, a being to whom the universe, whatever its unfoldings shall be, may be food for ever. Is man the individual that should come, or look we for another? Is man what Nature seeks and ever has sought from the age when there were only animalcules? If we interpret Nature as ethical, then, it may be, ethical man is what Nature desired, and in whom is found a capacity for the supreme expression of ethical progress. There has been a mournful amount of meaningless assumption written and spoken of the blinding pride to which man's nature is said to cling. It is charged with the rejection of orthodox belief: it is equally charged with the rejection of atheistic automatism; in fact, it is made to bear the blame wherever and by whomsoever an *oracle* is called in question.)

3. *Inconsistency of Annihilation.*

* *E.g.*, a meteorite rushes from the unknown empyrean, and is found to contain the familiar materials—iron, nickel, olivine. The sun teems with hydrogen, and the basis of common salt. Star-light has properties which are known to us in light from other sources; and our valued member, Mr. Isaac Roberts, only the other day, brought before our very eyes, from the constituent bodies in the nebula of Andromeda, evidence of obedience to laws discovered by Kepler in astral systems comparatively much nearer home.

(Page 382. If man perish, there has been no searching—no purpose, no desire, no ethical aim—no hunger for rightness; we have read the whole story wrong: what seemed to be a magnificent unfolding and progressive revelation of intelligent purpose was only a soulless trend of fateful atoms and forces.)

4. That there should be physical, but not psychical, conservation of energy seems to myself to be incredible.

(Page 384.) Does transformation at death involve such a breach with the organic heredity of man that, while the elemental body is passed over to the action of physical forces, it must be impossible for him to draft off, to fulfil higher relations, a substantial self of a spiritual sort? Mr. Powell affirms that there is nothing in nature which renders this a monstrous supposition; for that evolution has at more than one point established a new order of relations, involving consequences quite as astounding.

5. *The limits of human life.*

Every material particle in our bodies is repeatedly changed—physically we become new creatures every few years. It cannot be the physical frame that demands a limit of threescore years and ten, for the muscle and the bone are renewed perpetually; and when a man dies he has not a particle in his body that he has had in work ten years. It must be a psychical necessity.

(Page 401. Physical decay and death in evolution is therefore not an evil. It never has been an evil. It is a part of meliorism and progress.) As to the distressing character of the end itself, persons thus situated commonly attest that there are few things in life less painful than its close. If I had strength to hold a pen—said William Hunter, of Edinburgh—I would write how easy and delightful it is to die. If this be dying, said the niece of Newton of Olney, it is a pleasant thing to die. The same words—

says the *Quarterly* reviewer—have so often been uttered under similar circumstances, that we could fill pages with instances only varied by the name of the speaker.

Our remarks on the faith of an evolutionist must now be brought to a close. The faith which an evolutionist may derive from his special study, may be of large or small account in comparison with that which he may attain through other sources, *e.g.*, the witness of sacred books. The streams should mutually be tributaries, and always would be so, but for the tendency on all sides to set up infallibility as attainable, and, *before all things*, to be sought after.

Why should we so hanker after positive certainties, when all the very best and most salutary influences that form our characters and mould us into human beings, men and women, worthy of a place in God's great work, are distinguished by the absence of infallible certainty—We are saved by hope—Love, uncertain to a proverb—Love, that if it could be shorn of its anxiety, would lose half its energy—the sympathy of friends—anticipation—the affection between parents and children—the spirit of alliance—the troubles we incur in striving to know our own hearts! Why, in all these things, there is not a holding place whereon to fasten a certitude or a positive proof.

Yet these are the powers that make us—beginning with infancy, shaping us without intermission, in the “circle of the suns”—in all our *real* life, constraining us to trust, where we cannot see.

Whether personal or impersonal, or whether neither of these terms can here be applicable, that infinite ENS which has maintained the progress of the universe from the so-called beginning to the present day—immeasurably, inconceivably, vast though the eternal, immanent EXISTENCE be—has the features of a life, and the true properties of a character. For the same is proved capable of being

regarded with intelligent acquiescence—of being feared, hated, loved; and of being hopefully entrusted with man's destiny.

If then we have apprehended the thought that evolution is prophetic—if, with Huxley, we can admit the higher teleology—we are on the way not to agnosticism but to a brotherhood of faith that knows no limits short of the human race. For teleology implies in the cosmos a lovable and reliable as well as an awe-inspiring character.

The Greeks were indifferent to moral consistency of character in their divinities. Men of all other civilized religions have constantly been subject to Manichean influence. Every Osiris has had his Typhon: every Allah his Eblis: every Ormuzd his Ahriman. How great must be the liability in man to offer that most painful service—a divided homage; and how wondrous his enfranchisement by the knowledge of evolution.

When therefore we come to think of death, our anticipations can have nothing of the certitude of a natural law, but only the kind of trust we may have in the heart and hand of a friend; coupled with the grateful reflection—the psychical *magna charta* of evolution—that there is no antagonistic hand into which, if it existed, it might be possible for ourselves, or those we love, at death to fall.

THE NEW ENGLISH DICTIONARY AND SOME OF ITS PREDECESSORS.

By R. McLINTOCK.

As neither the ancient Greeks nor the Romans had anything which would correspond with the idea which the word dictionary suggests to us—there is no name for such a thing in the classical languages, and the late words *dictionum*, *glossarium*, etc., according to the Brothers Grimm, meant something quite different—it is not very surprising that the history of English lexicography is rather of the shortest, especially if we exclude from our reckoning the various bilingual dictionaries, glossaries, vocabularies, etc., intended to facilitate the learning of Latin, Greek, and the more useful or fashionable of contemporary continental languages. Of these it must suffice to say that one of the earliest—perhaps the very first—was published in 1499 by Richard Frances, a “preaching or black friar,” under the title of “*Promptorius Puerorum. Promptorium Parvulorum sive Clericorum. Medulla Grammaticæ*,” and is now a valuable source of information as to old English words, and one that is frequently cited in the New Dictionary. The first books in which English words were explained in English were not dictionaries in our sense of the word: they professed merely to “explicate” hard words. Here is the list of them taken from the “History of English Lexicography” prefixed to *Webster’s Dictionary* (Ed. 1856).

1616. “*English Expositour or Compleat Dictionary, teaching the Interpretation of the Hardest Words and Most Useful Terms of Art used in our Language.*” By Dr. John Bullokar. (The 8th edition, 1688—“very much augmented”—contained 5080 words).

1632. "*An English Dictionarie, or an Interpreter of Hard Words.*" By Henry Cockeram.

1656. "*Glossographia, or Dictionary interpreting the Hard Words now used in our Refined English Tongue.*" By Thomas Blount (or Blunt),

1658. "*The New World of English Words, or a General Dictionary, containing the Interpretation of such Hard Words as are derived from other Languages.*" By Edward Philipps (Milton's nephew).*

1677. "*An English Dictionary, explaining the difficult Terms that are used in Divinity, Husbandry, Physick, Philosophy, Law, Navigation, Mathematics and other Arts and Sciences.*" By Elisha Coles.

1707. "*Glossographia Anglicana Nova, or a Dictionary interpreting such Hard Words, of whatever Language, as are at present used in the English Tongue.*" Anonymous.

1708. "*A General English Dictionary, comprehending a Brief but Emphatical and Clear Explication of all Sorts of Difficult Words, that derive their origin from other Ancient and Modern Languages*" By John Kersey.

1721. "*An Universal Etymological English Dictionary, comprehending the Derivations of the Generality of Words in the English Tongue.*" By Nathan Bailey.

1724. "*Cocker's English Dictionary, Enlarged and Altered.*" By J. Hawkins. (Cocker died in 1677).

1752. "*A New General English Dictionary, peculiarly calculated for the Use and Improvement of such as are unacquainted with the Learned Languages.*" By Thomas Dyche and William Pardon. (7th ed.)

1735. "*A Compleat English Dictionary, containing the True Meaning of all the words in the English Language.*" By B. N. Defoe.

1737. "*A New English Dictionary, containing a large and almost complete Collection of English Words.*" Anon.

1749. "*A New Universal English Dictionary.*" By Benjamin Martin.

1754. "*The Royal British Grammar and Vocabulary, being an entire Digestion of the English Language into its proper Parts of Speech.*" By Daniel Farro.

* The title of Philipps' work contains a reference to Floris's *A World of Words; a most copious Dictionarie of the Italian and English Tongues*. 1598.

1755. "*Bailey's Dictionary, Enlarged and Revised.*" By Joseph Nicol Scott.

1755. "*A Dictionary of the English Language, in which the Words are deduced from their Originals and illustrated in their different Significations by Examples from the best Writers.*" By S. Johnson.

Between Bullokar's "Expositour" (1616), and Johnson's "Dictionary" there are fourteen works, of which the seven that precede Bailey (1721) make no pretence of completeness. Bailey was the first to mark the place of the accent in polysyllables, but neither he nor any of his predecessors distinguished the parts of speech. I do not carry the list beyond Dr. Johnson, both because the improvements made on his work during the century which followed its publication were relatively insignificant, and because Johnson's Dictionary is the true forerunner of the great work whose first volume is now before the world. The distinguishing feature which Dr. Johnson introduced into lexicography—the illustration of the different uses of words by extracts from the best writers—has been adopted by the most famous and most scientific dictionary makers of the continent, the Frenchman, Littré, and the Germans, Grimm, and their successors, and has been carried out in such a manner by Dr. Murray and his coadjutors in the New English Dictionary as to make that work the nearest approach to an ideally perfect dictionary of a modern language that the world has yet seen.

During the latter part of the hundred years which followed the publication of Johnson's Dictionary, linguistic science made great progress, and the serious insufficiency of Dr. Johnson's scholarship, felt more and more distinctly as the years went by, together with the natural changes undergone by the language itself, made a new dictionary of our tongue a thing much to be desired. Then, in 1854, the Brothers Grimm published the first volume of their great

German *Wörterbuch*. In 1857, the Philological Society, at the suggestion of Dean Trench, resolved that materials should be collected for a dictionary, which, by the completeness of its vocabulary, and by the application of the historical method to the life and use of words, might be worthy of the English language and of modern scholarship. With this view it was resolved to begin at the beginning, and extract anew typical quotations for the use of words from *all writers whatever before the sixteenth century*, and from as many as possible of the more important writers of later times. The time requisite to complete even this preliminary labour proved so long that several promoters of the undertaking died, and many became absorbed in other duties, before it was possible to take in hand the actual preparation of the intended Dictionary; but the materials continued to accumulate, till upwards of two million quotations had been amassed, portions of which were also provisionally arranged and made more or less ready for use.

For several years no further steps were taken, but in 1878, Dr. Murray, for the Philological Society, laid before the delegates of the Clarendon Press specimens prepared from these materials, and they consented, on certain conditions, to bear the expense of printing and publishing a dictionary to be founded on these materials. Careful examination of the quotations revealed many deficiencies, and a new appeal was made to volunteers to collect additional quotations from specified books. More than eight hundred readers responded to this appeal, and in the course of three years additional quotations were received, which raised the total number to about three and a half millions, selected by 1,300 readers, and drawn from the works of more than 5,000 writers. Publication began in 1884, and about this time last year (the Preface is dated April, 1888,) the first volume of 1,260 pages, containing the letters A and B, was completed.

In order to furnish something of a critical platform from which the work being done by Dr. Murray and his coadjutors may be properly appreciated, I have here set down a few particulars of the only two dictionaries which can in any way fitly be compared with it—the *Neuhochdeutsches Wörterbuch*, begun by the Brothers Grimm, and the *Dictionnaire de la Langue Française* of M. Littré.

Political events were the immediate cause out of which the great undertaking of the Brothers Grimm sprang. In 1837, King William IV of Great Britain and Hanover died, and was succeeded by his niece, her present Majesty, and—as the Hanoverian crown had not been made to fit a female head—his brother Ernest Augustus, Duke of Cumberland, one of whose first acts on becoming king was to abrogate the Constitution granted to the Hanoverians only four years previously by King William. Seven professors in the University of Göttingen hereupon refused the oath of allegiance, and were deprived of their offices, and some of them were banished the country. Among them were the brothers Jakob and Wilhelm Grimm, who were already famous for their knowledge of Teutonic antiquities, language, and literature. Being thus thrown out of employment, they were sought out by the head of an eminent publishing firm who proposed that they should start work on a new German Dictionary which should be worthy of the name and of their scholarship. They agreed to the proposal, and in seventeen years—that is, in 1854—produced their first volume, containing the letter A and part of B. Wilhelm Grimm died in 1859; nevertheless his name was continued on the title-pages of the next two volumes, published respectively in 1860 and 1862, and bringing the work down to the middle of the letter F. In 1863 Jakob Grimm died. Other hands were found to carry on the work, but it took time to pick up the broken threads. It was not until 1873 that

another volume appeared, and then it was volume V, containing the whole of the letter K, and edited by Rudolf Hildebrand, that came. This was followed in 1877 and 1878 by volume IV, in two parts of 1076 and 1204 pages respectively; part 2, edited by Moritz Heyne, being published first; the first part, when it came, bearing the names of Jakob Grimm, Karl Weigand, and Rudolf Hildebrand. The sixth volume, containing the letters L and M, and edited by Moritz Heyne, came out in 1885, and there, for the present, it rests. In thirty-one years from the beginning of publication one-half of the alphabet has been gone through, and seven volumes produced averaging 1,100 pages large octavo each.

I cannot say that I am very familiar with this really great work, which with all the treasures of erudition that it contains is very unattractive—and this in spite of the “setting-in” of the verse quotations from which the writer of the preface expects such great things. A few words from the preface, however, explaining the nature and scope of the work, will not be amiss here. The Brothers Grimm, it seems, did not like the word *Dictionary*, which to them meant only a book of select phrases, or something akin to our early English Dictionaries. They preferred *Wörterbuch*—word book—for their work was intended to contain all the words which have formed part of the literary High German since the middle of the fifteenth century. The language of this period is generally known among German philologists as “New High German” in contradistinction from the “Middle High German” and “Old High German.” Old High German extends from the middle of the eighth century to the middle of the eleventh, and “Middle High German” covers the intermediate time from the eleventh to the fifteenth century. The word “new,” therefore, in the title of the book refers to the language, and not to the work—in the

New English Dictionary the converse is the case. The main reason why the Grimms made no effort to include the whole language from its beginning is the impossibility of mastering the whole of the literature of such a period. It is impossible indeed, they say, to know the whole even of the written and published books of the seventeen years which have elapsed since the beginning of their own work. Therefore, while not excluding from consideration any writer or any book within their period—four centuries—all that they can promise is that their explanations shall be guaranteed by quotations from the more eminent writers of each century—and, with Luther and Hans Sachs at one end, and Goethe at the other, they seem to keep their promise well.

In France, as everybody knows, there has existed for 250 years an Académie whose main purpose has been the cultivation of the French language and the preparation of a dictionary. This dictionary, however, which is now in its 7th edition, not being either historical or etymological, quite fails to satisfy any except the most superficial students. Conscious of this, and impelled, as he tells us in his preface, by his studies in the older forms of the language, M. Littré, himself a member of the Academy, undertook the gigantic task of writing a dictionary which should answer the demands of modern scholarship, and in 1872, after more than twenty years' work, with no assistance except that of his wife and daughter, he was able to place the last instalment of his dictionary in the hands of the public. It is indeed a monumental work, and has, for all serious purposes, quite superseded the product of the never-ended task of the Academy. It omits no word that is given in the dictionary of the Academy, and its additions to the Academy's vocabulary number thousands. The main points, however, in which it differs from the Academy's dictionary are the results of the adoption of the historical method. The Academy, in

treating a word which is used in several senses, places the most usual meaning of the word first, and makes no attempt to affiliate its various uses one to another. Now, in a language which has lived through so many centuries as the French has, it will very frequently happen that the most common modern sense of a given word will be a long way from its original signification, and will furnish no clue as to the way in which its other uses, past or present, have arisen. And then the Academy avoids etymology altogether, and claims the right of manufacturing its own illustrative sentences. Its dictionary is therefore a merely popular one, almost valueless to the real student of language. M. Littré gives in the first place, wherever it is discoverable, the sense in which the word was used when first introduced into the language; he then arranges the other and later significations in as good a *logical sequence* as he can make out for them, and for each meaning gives one or more quotations from classical or standard writers of the seventeenth century and later times. In addition to these he gives quotations in *chronological order* from writers of the previous centuries, which constitute what he calls the *historique* of the word, and lastly the etymology—this consisting in the mention of the word or words in Latin or other language from which the French word is derived, or out of which it is compounded, and the enumeration of cognate words in kindred languages. This is a great advance on the Academy's performance, and if I presently proceed to shew that the conception falls short of the demands of modern scientific wants, and that the execution sometimes does not come up to the conception, it is not that I would depreciate the really great work of a great man, but that, despite the failure of the French Academy, experience has now shewn that by the intelligent co-operation of many workers a much nearer approach to an ideal dictionary can be made than is possible to the single handed scholar.

It will have been noticed that both the Grimms and M. Littré limit the retrospective purview of their respective works, the former declining to look further back than the middle of the fifteenth century, and the latter making his start at the classical era of the seventeenth century. The Grimms point to the immense mass of literature to be examined, and one cannot but admit the force of the plea; one or two men cannot master the whole literature of twelve or nine centuries of a modern language as a clergyman masters his Bible. M. Littré does not claim the benefit of this fact; his refusal to look at the earlier centuries is based on a principle under whose operation we in England have escaped falling. Enumerating the various sources from which words not to be found in the Academy's Dictionary have been or might have been drawn he says:—"Writers of the sixteenth, fifteenth, and even earlier centuries, would furnish a plentiful supply if it were possible to draw on them unreservedly. But the greatest discretion is necessary here; that which is quite dead ought to be allowed to go. Nevertheless, it is not forbidden us to pick out of this rich heap of ruins a few bits of wreckage (*quelques épaves*) capable of being restored to circulation, provided that the words thus brought back into the language offend neither ear nor analogy, and are self-explanatory." M. Littré is thus seen to be not free from the fault described by a recent German writer:—"In their one-sided overestimate of the classical Louis XIV-time the French are quite too much in the habit of regarding their mediæval language and literature as rude and barbarous, and it is very difficult to them to overcome this prejudice. Further, by their great Revolution they have broken with their national past, which they look upon not only not impartially, but often indeed with a preconceived evil opinion." (Körting, *Encyc. der Rom. Philologie*, I, 183.) A descriptive title to M. Littré's Dictionary might run:

“An Etymological and Historical Dictionary of the French Language as exemplified in the best writers since the beginning of the seventeenth century.” Grimm’s is fairly described by the title actually given to it—“New High German ;” being taken to extend from the Reformation time to the present. It will now be clear that neither of these two great works is a dictionary of their respective languages in the same sense as our New English Dictionary may claim to be of English.

In order to exemplify the progress of lexicographic science, I propose to take a word which has been in use both in English and in French for six and a half centuries, and shew how the dictionaries treat it. I should have liked to do the same with some word both English and German, but have not been able to think of or find one suitable—words important enough to be interesting are apt in German to make very long and technical articles.

Our English verb *to avow* is derived from and is precisely equivalent to the French verb *avouer*. We will see first what the French dictionaries say about it. The Academy defines its meanings thus :—

1. To confess or admit that a thing is or is not.
2. To own (a person or a thing) as in some way belonging to us.
3. To approve or ratify (an act).
4. To assume the responsibility of an agent’s acts.
5. *S’avouer d’une personne (refl. with genitive)*. To look to or rely on a person for favour or countenance. This phrase is little used.

These definitions, and some illustrative phrases of its own manufacture, are all that the Academy condescends to give. Turning to M. Littré, we find a tremendous advance. According to him the word means, or has meant :—

1. In feudal times, to make a vow to a superior; to recognise as lord.
2. By extension now: to approve of what is done in our name.
3. To admit that a thing is or is not.
4. To recognise as one's own (a letter, etc.).
5. *S'avouer de quelqu'un (refl. with gen.)* Rely on some one for countenance, favour, etc.; (*refl.*), to confess oneself (beaten, etc.).
6. (*Pass.*) To be confessed.

These meanings are all illustrated by quotations from writers of repute of the seventeenth century and later times. Further quotations from writers of the thirteenth and sixteenth centuries furnish the *historique* of the word, and then follows the etymology, from *à* and *vouer*. *À* is, of course, the *prep.* *à* = Lat. *ad.*, and, turning to *vouer* (to vow), we find its source given as “Lat. *votare*, derived from *rotum*, a vow;” *rotum* itself being derived from the verb *rovere*, to vow. Under the cognate substantive *aveu*, M. Littré declares the sequence of meanings to be—“act of vowing (and properly, of vowing feudal service); then approbation; then recognition of right; and, lastly, confession.” Is it clear how the other meanings hang on the first? I think not; nor is the case improved by recalling the word *avoué*, the past participle of the verb, and the name given both to a pleader in the law courts and the patron or defender of a church, always rendered in Latin by *advocatus*, the past participle of the verb *advocare*. Let us see whether our English scholars can clear this up. Dr. Johnson certainly cannot; he simply derives *avow* from *avouer*, defines it as meaning “to declare with confidence; to justify; not to dissemble,” and illustrates it with quotations from Spenser, Boyle, Dryden, Thomson and Swift. He also gives *avowee*, or *advowe*, as the title of the holder of an *advowson*, derived

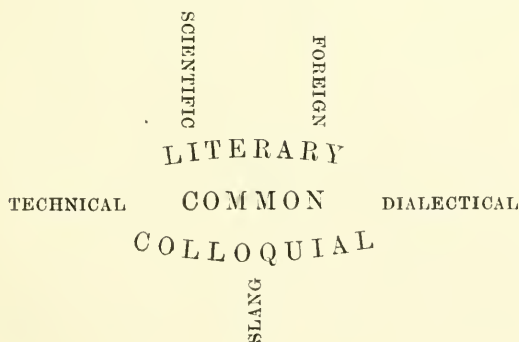
from *avoué*. A quotation from Cowell under *advowson* tells us that the original holders of that right were sometimes called *Patroni*, and sometimes *Advocati*. Putting this together, we are driven to the conclusion that *avow* is somehow related to *advocate*. Against this we have the fact that *vow* is said to be derived from Fr. *voeu* (Lat. *votum*) or Fr. *vouer* (Lat. *vovēre*) according as we enquire of the substantive or the verb. Dr. Johnson though, we may note, is superior to the French Academy, in that he makes an attempt at etymology, and justifies his definitions by reference to other writers than himself.

Turning now to the New English Dictionary, we find *two* verbs *to avow*, one altogether obsolete, the other obsolete in some senses, and in some still full of life. We will look at the latter first. This is stated to be derived from the Fr. *avouer*, and that in turn to be the issue of the Latin *advocare*. The general meaning of our word is said to be "to call to, to call upon; especially to call in as a defender or patron; hence, in feudal times, to call upon, or own as defender, patron, client, or person in some way related; to acknowledge (a person) as ours in some relation, afterwards extended to things." This makes the whole thing comprehensible. The word was an invention of the feudal lawyers—the earliest discovered use of it, both in French and English, dates from the thirteenth century; it was equally applicable to patron and client: each was liable to be called upon for the other's defence; people who knew the use, but not the source of the word, took it to mean to claim or admit an interest in a person; this was easily extended to things, and in process of time the idea of admission or confession grew stronger, and the sense of claiming or calling upon was lost sight of, probably in consequence of the decay of feudalism, for the use of the word in that sense does not seem to have

extended beyond the middle of the seventeenth century, at any rate, in England.

The other verb *to avow* was derived from a later Latin *advotare*, a frequentative of *vox̄ere* formed from *votum*, and meant to impose or take a vow, or to dedicate or consecrate a person or thing to some pious purpose. The quotations shew that it was used from 1300 to 1600. As its earliest date is less than a century after that of the other verb, a proper search would probably discover it in contemporary or earlier French. It is quite clear, from its form, that it was a French word before it was English.

The first question which the dictionary maker has to settle is what the dictionary is to include. A modern language—and English pre-eminently—is no fixed quantity; it has a centre, but no circumference. Dr. Murray has represented the manner in which the various constituent elements combine to make up our language in a diagram, in



which the word “Common,” representing the great body of words used both in literature and in conversation, occupies the centre, with “Literary” above, and “Colloquial” below. Into the figure thus formed—which may be compared to an enclosed sea or lake—run five converging lines, streams that feed the lake. Through the upper margin—the literary

side—enter the scientific and foreign elements; between, the literary and colloquial come in, on the side nearest to science, the technical, and on the foreign side the dialectal elements; through the colloquial, slang finds admission. These very tributaries themselves, as a little reflection will discover, ramify into each other's regions. Slang, by the intermediation of trade and professional words and terms, easily shades into the properly technical, which in turn joins hands with the scientific. The scientific and the foreign are not divisible by any definite line, nor are the foreign and dialectal more sharply distinguishable, while, on the other side, the dialectal fades into mere slang, and so completes the circuit. The dictionary maker must travel some distance along each of these divergent lines, but, as they all lead out into infinity, and even the greatest of dictionaries has its limits, he is bound to stop somewhere; that somewhere, however, being of necessity more or less arbitrary, it is always open to a caviller to complain that he has either gone too far or not far enough. Dr. Murray's rule seems to be good: "He must include all the common words of literature and conversation, and such of the scientific, technical, slang, dialectal and foreign words, as are passing into common use, and approach the standing of common words." This does not differ essentially from that laid down with regard to scientific words by M. Littré: "Choice must be made of words likely to be required by a man of general culture, and his wants must be exceeded rather than stinted."

Dr. Murray divides words into three classes—Main Words, Subordinate Words, and Combinations. The volume, now complete, contains 31,254 articles, of which 22,232 are on main words, 4,292 on special combinations, and 4,730 subordinate words. If all the combinations illustrated by quotations were counted, the number would be raised to over

40,000. Of the main words 5,982 are obsolete, and 870 are alien or imperfectly naturalised. The proportion of obsolete words differs somewhat under the two letters here treated, being 28·3 per cent. for A, and 25·2 for B. This is owing to the fact that the words under A include a much larger proportion of Latin words (taken direct or through the French) than those under B. Many of these Latin words were learned importations of the Renaissance-time, and perished before the end of the seventeenth century. Another point of difference between A and B is that, while there are very few A-words that present any difficulty in an etymological sense, B is full of problems that puzzle, and even, in many cases, baffle the efforts of all investigators. Many of these words have no kindred abroad, but are purely English, and furnish proof that the "origin of language" is not to be sought only in Indo-European or pre-Aryan antiquity, but is still in perennial process around us. Dr. Murray enumerates a long string of such words, among which I notice "barn," "bilk," "blight," "blizzard," "blunder," "bore," "bump," "bustle." These words—mostly of relatively recent appearance—prove also that our language is still a really living language, and not a petrification such as it seems to be the object of French scholars to make of theirs.

The dictionary does not set up for an authority on what is correct in spelling or pronunciation. Where spelling is unsettled some form is chosen under which the explanation and the other forms are given; the other forms are also given in their alphabetical places, with cross references. In cases where two pronunciations are current, both are given; in some cases, as for the A in grass, glass, &c., an ambiguous symbol is used which may be interpreted as indicating either the broad or the close sound. I may remark that, although Dr. Murray is a Scot, his pronunciation is thoroughly English, but decidedly not Cockney.

In the very material point of "get up" it seems to me that it will be very difficult to go beyond the New Dictionary. The printing is beautiful; every typographical device possible for attaining the maximum of clearness at the same time as the maximum of condensation has been employed, with the result that after a very little experience in its use any precise point of information desired can be picked out without waste of time. Short paragraphs plainly numbered; various types for various purposes; dates made prominent—what a contrast to the long featureless paragraphs of uniform type and the jumbling together of explanations, remarks, and quotations of Littré and Grimm!

Doubtless it will be possible, as time goes on, to pick holes in the Dictionary—it has been done to a certain trifling extent already. But at present it is the high water mark of lexicography, and the honour belongs in the first place to the Philological Society and Dr. Murray, and in the second place to the Delegates of the Clarendon Press. For my own part, I am proud to have had an infinitesimal share in this truly national work, and to have the honour also of introducing it to the notice of the Liverpool Literary and Philosophical Society.

The particulars here given concerning the New English Dictionary are taken with more or less of condensation from the Preface to the first volume of the work itself.

FIRST STEPS IN DICTIONARY-MAKING :
ILLUSTRATED MAINLY BY THE WORD "HIGH"
AND ITS COMPOUNDS.

By R. J. LLOYD, M.A.

It seems not unfitting to follow up the account just given of the great enterprise which is now being carried out by the joint efforts of Dr. Murray, the Philological Society, the Oxford University Press, and a multitude of voluntary workers, by giving some account of the processes whereby the unwieldy bulk of illustrative material, now amassed and still amassing, is being gradually worked up towards its predestined form and uses. The unique feature of this dictionary is that the quotations wherewith it is enriched have not been adduced to illustrate the meanings, but the meanings, for the most part, have been deduced from the quotations themselves. It has aimed first of all to accumulate in the form of apposite extracts a complete and impartial conspectus of the actual forms and uses of all the words which have ever been used in literary English for the past seven or eight hundred years, and then to tabulate or index all those forms and uses in the columns of a dictionary. Being thus based strictly on historical principles, it never troubles itself much with the question what a word ought to have meant, or in what way it ought to have been used. Its task is simply to show for every word what it really has meant, and in what ways it really has been used from age to age since the English tongue began. The construction of such a work is evidently a very different task from the ordinary compilation of a modern English dictionary.

It would be impossible, within the limits of the present

paper, to give an adequate account of the whole process which intervenes between the amassing of the illustrative quotations (whose number is expressed in millions, and their weight in tons) and the presentation of their compressed essence to the public in dictionary form. But it will be possible to deal with the earlier half of the process in a fairly complete manner, and to offer a few reflections which are suggested thereby. A convenient line of demarcation is afforded by the fact that the earlier portion of the work is not done at Dr. Murray's headquarters in Oxford, but by voluntary workers in various parts of the country, who are styled sub-editors. I purpose, therefore, on the present occasion to follow the fortunes of the quotation-slips from the time when they are first sent up by the various readers to the editor, to the time when they are again sent up to him from the various sub-editors. This is the part of the work which is most familiar to me, because I have myself been engaged in it. My knowledge of the remaining part of the process is less complete, having been gained only during a short visit paid to Oxford, and to Dr. Murray's Scriptorium, in the summer of 1887. In the event of my repeating that visit this year, a short account of it, embodying fuller knowledge, would be the best possible supplement to the present paper.

On the arrival of a new parcel of quotations at the Scriptorium, the first person into whose hands it is committed is the sorter. It will be seen from the specimen of quotation-slip here exhibited that each of them bears in its left-hand upper corner the name of the word which the subjoined quotation is intended to illustrate, written in its normal modern spelling, generally by the reader himself. This word in the corner is called in dictionary parlance the "typical form," or sometimes the "catchword." The office of the sorter is, therefore, for the most part mechanical; it

(Specimen of quotation for an ordinary word.)

Diplomatist, *n.*

1860. J. L. MOTLEY, *United Netherlands* (ed. 1868), I. ii. 24.

*If diplomatic adroitness consists mainly in the power to
deceive, never were more adroit diplomatists than those of the
sixteenth century.*

consists simply in arranging the slips received in the strict alphabetical order of their catchwords.

It is only in one class of cases that he finds any ground for uncertainty or hesitation; that is, when the word has long been obsolete, for it then does not possess *any* modern spelling, and it is consequently impossible to range it under any living catchword or typical form. Of course it can always be ranged under its actual spelling, as found in the several quotations, but such is the variety of ancient orthography that in that case the quotations for one and the same word might be found distributed in ten or twenty different places. Fortunately, however, it is nearly always possible to say what the normal modern form of the word *would have been*, if it had lived long enough, and by making this, generally imaginary, form into the catchword, it is secured that all the slips belonging to it shall be assembled into one place, although that place, as will be seen hereafter, is not always exactly the right one, or at least the best one.

The next process after the sorting is the cutting up of the huge alphabetic series thus produced into blocks suitable for sub-editing. The quantity sent to a sub-editor at one time never bears any great proportion to the total mass. The parcel which I have in hand at present comprises all the slips whose catchwords begin with HI; it comprises many thousand quotations, illustrative of several hundred words; but it constitutes, although it is larger than the parcels usually sent out, not more than the three-hundredth part of the whole accumulation.

In consideration of the irreplaceable nature of these materials, no portion of them is ever sent to be sub-edited beyond the seas, notwithstanding the zealous desire of many American, colonial, and other distant scholars to co-operate wherever possible in this Pananglic enterprise.

The first work of the sub-editor is to read through all his

slips, and arrange them under their distinct words and parts of speech. The merely alphabetical work of the sorter has left all words of identical form, however they may differ in sound, or sense, or grammatical office, in a state of indiscriminate mixture. Quotations, therefore, for *wind*, verb, and *wind*, substantive; for *hinder*, verb, and *hinder*, adjective; for *list*, a catalogue; *list*, the border of woollen cloth; *list*, an enclosure; *list*, to listen, and *list*, to please, all lie as yet in a state of intimate confusion. Add to this the fact that the majority of common words cannot be classed always under the same part of speech, but generally need to be distributed into two or more distinct grammatical categories, and it will be seen that this stage of the editorial work is by no means a slight one. Even so unusual a word as *hieroglyphic* turns out upon examination to be a noun, an adjective, and a verb, whilst the adjective *high* turns out to be also used as a noun, a verb, an adverb, and perhaps even as an interjection!

At this stage, too, the very numerous and important class of compound words gives rise to many difficulties of its own. The materials of a word like *high* present an immense multitude of double-worded expressions containing *high* as their prior element, and these demand a two-fold winnowing before they can be rightly placed in the dictionary. The first winnowing process consists in the rejection of those which are not true compounds at all, and which require no explanation whatever. It would be useless, for example, to explain the meaning of *high hill*, *high price*, *high office*, or *high antiquity*. Their meanings are each regularly and grammatically constituted out of some of the most ordinary meanings of their parts, and it is useless to waste time over them further.

But when either of the two words is used in one of its less usual meanings, or when the compound as a whole possesses

some signification which is not strictly contained in its parts, it evidently demands more or less elucidation, and is best regarded as a compound. *High-tide*, *high-seas*, *high-road*, *high-relief*, *high-sheriff*, *high-change*, each contain no meaning which is not already fully contained in their respective elements; and yet their meaning is not obvious at a glance, because one or both of the elements is employed in some other than its most familiar sense. Nor, again, would anybody guess, without previous knowledge or elucidation, that a *highwayman* was a kind of robber, a *high-head* a kind of coiffure, a *high-low* a kind of boot, a *high-man* a kind of loaded die, or that, when our ancestors spoke of a *high-father*, a *high-angel*, and a *high-bishop*, they meant a patriarch, an archangel, and an archbishop respectively.

But when this sifting process is over the body of real compounds thus obtained needs sifting a second time for another purpose. The amount of explanation which most of them need is small; a dozen words and a quotation explain them fully, and they are then marshalled in classes, according to their grammatical form, in the wake of the word which constitutes their prior element. But a large minority of them are too frequent in use, too important in history, and too diversified in meaning to submit to such a summary treatment. They demand a place for themselves in the alphabetical concourse of English words, and wherever the considerations of extreme currency, or long history, or diversified meaning are sufficiently strong, it is desirable to concede them one. The most casual observer can see that it would be ridiculous to treat *highway* and *highlander* and *highflier* as mere compounds of *high*; and when the evidence is examined it is no uncommon thing to find that other words of long date, such as *high-flying*, *high-flown*, *high-bred*, have exhibited historically half-a-dozen or a dozen different meanings. Hence the necessity for a second

process of sifting whereby the general body of compounds is divided into a less important and a more important class, the one destined to be treated *en masse* under the principal word, and the other to be honoured with separate notice in the ordinary columns of the dictionary.

The sub-editor's trouble in carrying out both these siftings is that, although he is able to indicate the desired distinction very sharply in words, and by chosen examples, there is no such sharpness of distinction in the materials themselves. Neither of the divisions which, for practical purposes, he is compelled to draw, represents any palpable demarcation in reality and fact. The classes shade off into each other imperceptibly, and the task of allocating the doubtful instances is beset with conflicting considerations. What shall he do with *high art*, *high life*, *high feeding*, the *higher-house* (of Parliament)? Do they demand explanation, or shall they be "cast as rubbish to the void" along with the rejected ones? It has generally seemed best to give the dictionary reader the benefit of the doubt. A work which is intended for the use of distant ages and places cannot be too full and clear in the explanations afforded.

The other sifting, which might perhaps be deemed the more difficult, is really much easier. It lies in a much smaller compass, and the rough practical consideration whether any given compound can be fairly dealt with in two or three lines of the general list is generally sufficient to fix its destination with tolerable fairness.

In this stage, also, those obsolete words which the sorter has arranged provisionally under hypothetical, and generally imaginary, catchwords, come up for reconsideration, and often present very interesting problems.

The natural thing to do under the circumstances is to review the material which is actually found to exist, to ascertain the *latest* form in which the word was actually

current, and then to index it accordingly. There were a number of slips in my parcel bearing the catchword *highship*, meaning honour or dignity, but it turned out upon examination that they belonged entirely to the Anglo-Saxon period, when the normal form of the word was *héahscipe* or *héhscipe*, and they were accordingly transferred to an earlier position in the dictionary.

The same rule neatly applies to most words which became obsolete in comparatively recent times. The materials for the word *hiccup* were found to contain a large number of quotations which really belonged to another resembling and synonymous word, whose final form in seventeenth century spelling was *hicket*. They were accordingly separated and conveyed under that head.

But when words become obsolete in the Middle-English period this treatment is not quite feasible. It must never be forgotten that for three hundred years after the Conquest there was no standard dialect of literary English; everyone wrote in his own local dialect, everyone spelled by sound and not by rule, and, to heighten the confusion, the very letters of the alphabet are found to fluctuate in value, being used with a varying significance at different times and places. As an illustration of this, it is perhaps sufficient here to note that for about three centuries the word *high* has been spelt as we now know it; its spelling before the Conquest is almost equally stable; but it is spelled in the five intervening centuries in no less than forty-six different ways, each of which has nearly as much right to be considered correct as any other.

Hence a practical difficulty, which is well illustrated by a group of quotations which came to me under the catch-word *high-settle*. The word is Old English, and means throne or judgment-seat; it is supported by quotations from Mercian and Northumbrian as well as West-Saxon (*i.e.*, classic

Anglo-Saxon) sources ; it has a short life in Middle-English, and expires about the year 1200 in the form *heg-settle*. Now it is quite a chance that its final form is in *heg-* rather than in any other of the forty-six forms which experience shews to have been possible. The exactly parallel word *high-father*, expiring just at the same date, has for its final form *hage-fader*. It would be highly absurd therefore to index it under *heg*, except by a cross-reference : and in fact the only reasonable course seems to be to keep it under the hypothetical form *high-settle*, certain as we may feel that no such form has ever existed.

This stage being over, the sub-editor's next task is to arrange the quotations for each several word in the order of their date. As every slip ought to, and generally does, bear its correct date on the face of it, this work is mainly mechanical. It is necessary even here however to be on the look-out for anachronisms. Sometimes a thoughtless reader puts down the date of the *edition* instead of that of the work : it is irritating, for example, to find a quotation from Scott dated 1864. At other times the date is only an approximation, the best no doubt that could be made when the book was read, perhaps twenty-five or thirty years ago, but often very widely removed from the estimates of modern scholars. This is notably the case with quotations from the Lindisfarne and Rushworth gospels, both of which are now considered to be a century or two older than the date which the gentleman who read them for the dictionary has placed upon his slips.

The next step is to take the body of slips belonging to each word, while they are still in this simple chronological order, and make a list of the forms which the word has successively assumed since its first introduction into English, attaching also to each form the numbers of the centuries during which it is found in use. The result, in the case of an old word like *high*, is to produce a long and, to the

untutored eye, chaotic-looking list of forms, whose chief teaching might easily be thought to be that there was a great lack of good spelling books in the days of the Plantagenet kings. The word *high* exhibits altogether in the positive degree fifty, in the comparative twenty-one, and in the superlative twenty-four different forms.

But in the present state both of English and of general linguistics there are few things more interesting to the student than these lists of apparently barbarous misspellings. Their charm is that they are frankly and fully phonetic; they transcribe faithfully, or at the least are meant to transcribe faithfully, so far as the alphabetic resources of their writers will permit, the actual sounds which were used by our Middle-English ancestors. The result is that there is no finer field to be found anywhere for studying on the largest scale the laws of the historical development and succession of spoken sounds than Middle-English, and so far is the linguistic student from joining in the condemnation of these archaic spellings that he is tempted to wish that people had always continued trying to spell words as they really speak them, and that that orthographical monstrosity, the English spelling book, had never been invented.

It was my original intention to have here demonstrated from these forms the sound-history of the word *high*, but it would have been a digression from the subject of the evening, which is essentially the Dictionary: and I soon found out that the limits of any reasonable digression would be insufficient for the full and careful treatment which the subject requires. Nevertheless, it seems appropriate here to note that the collections of the Philological Society, which form what may be called the raw material of the dictionary, will not have lost all their interest when the dictionary itself is made: they will still constitute by far the most important mass of material which is anywhere available to the student

of the laws of the succession and development of spoken sounds, and it is strongly to be hoped that means will be taken so to bestow them when the dictionary work is ended that they may be readily accessible to all competent scholars. The sound-history of short words like *high* is peculiarly interesting to philologists at the present time. The broad laws of the historic mutation and succession of the individual consonants and vowels are now generally understood and accepted: but it is found that in many instances the result is modified very considerably in certain collocations, and that sometimes two almost identical collocations present a remarkable contrast in their subsequent sound-development. Some progress has been made in reducing to law the influences of collocation, notably in the discovery of Verner's law, and the phonetic explanation of *umlaut*; but much more remains to be done, and in the many remarkable cases of divergent growth from a nearly identical stem, explanation is almost unattempted.

The word *high* is interesting in both respects. Its original form as seen in *Beowulf* and the early literature of Wessex is *héah*, but in the sister dialects of Northumbria and Mercia it appears from the earliest times almost exclusively in the non-diphthongal form *héh*: and the modern form is, in this case as in most others, traceable more directly to the Mercian than to any other form. In the early Middle-English period it differs in form and sound from the pronoun *he* by nothing more than the additional *h*. Yet in modern English the vowels of these two words are totally different, and the difference is undoubtedly due to the collocation of the *e* of one of them with a following *h*. But for that collocation the adjective would certainly have been pronounced in modern English exactly like the pronoun: and the conclusion is not a merely empirical one, but can be clearly traced in the written forms of Middle-English, and

satisfactorily accounted for at every step of its phonetic development.

But aside from the main stream of instances, there are a few which show that the word *high* in some dialects tended to progress also through another series of forms, such as *hage*, *ha3e* and *hohe*, to a sound closely resembling that of the cognate German *hoch*; and we know also that the conjunction *though*, O.E. *þeah* (contracted *þéh*) not only produced a similar series, but that they became the prevalent ones, and the direct progenitors of the modern form *though*. Philology is called upon to explain sooner or later why the development which is so feeble in the one word is so triumphant in the other, insomuch that *héh* and *þéh*, which rhyme exactly in Old-English, have produced forms so dissonant as *high* and *though*. But it is time to abandon these reflections, and return to the subject of dictionary-making.

As soon as the list of obsolete and archaic forms is completed, the next duty of the sub-editor is to make out a slip for each of them, giving first of all its actual spelling, and then stating that it is an archaic or an obsolete variation of that which has been adopted as the "typical form" or "catchword." The slips thus made out fall once more, upon their return to Oxford, into the hands of the sorter, who then distributes them each into its exact alphabetical position, and thus creates a huge system of cross-references, whereby even the most extremely perverted spellings can be traced to their true origin and meanings. It is hardly to be expected for example that, without some help of this kind, the users of the dictionary would be able by their unaided insight to look for the meanings of forms like *hoh*, *he3y*, or *y3e*, under the adjective *high*, or to divine that *herre*, *harre*, or *ha3er* meant *higher*, and that *heast*, *hexte*, and *hexist* are archaic forms of *highest*.

It is not until these steps are completed that any attempt

is made to discriminate between the different meanings of the same word, except in that broadly marked case where it is converted into a different part of speech. It is now the duty of the sub-editor to take the whole series of slips belonging to each several word and distribute them into separate parcels, according to meanings and constructions. It is natural and convenient at this point to call in the aid of other dictionaries in order to map out the main lines of sub-division; but it soon becomes apparent that the old frameworks are too narrow, and that many very distinct shades of meaning have entirely escaped the notice of our older lexicographers. Earlier dictionary makers seem either to have despised illustration altogether or to have simply angled in the waters of literature for illustrations suitable to a preconceived set of meanings; but the modern dictionary-maker sweeps the whole of those waters with a drag-net, and then proceeds to classify and catalogue his spoil with the minute completeness of a naturalist. And as the sub-editor is specially desired here to make his sub-division as searching and complete as possible, the number of meanings catalogued under some words is very surprising. The materials of the adjective *high*, which are displayed here this evening, will be found to be arranged under no less than sixty-eight different meanings, besides being contained in twelve different phrases which do not attach themselves precisely to any of the meanings. The same word used substantively has eight more meanings and four more phrases; the adverb *high* has twenty-eight meanings and two phrases; and the obsolete verb *to high* has eight meanings more, making the formidable total of one hundred and twelve meanings and eighteen phrases, without saying anything about the innumerable multitude of compounds, which will be dealt with in due course by and by. But it is even more surprising to find less common words, such as *highness* and *hieroglyphic*, running up a list of

fourteen or fifteen very distinguishable meanings. And subdivide as one may, there are always actual uses which seem to be exactly intermediate, or to have at one and the same time suggestions of *several* of the more primary senses.

The use and comparison of other dictionaries, which is at this point necessitated, proves to be interesting and instructive in many respects. The chief result is to give a wonderful impression of the great completeness of the amassed materials. Very few words indeed which have ever been used in literary English have escaped the industry of the readers. The great majority of the words which find no place there are either technical or scientific; and it is continually necessary to remind critics of the Dictionary that it has from the first expressly refused to make provision for words of those classes, except in so far as they are or have been adopted into literary or general use. When these have been allowed for, the remainder consists mostly of that class of words which may be called emphatically dictionary words, words which have not, and never had, any existence outside the backs of a dictionary. Some of these are simply words of regular formation which the dictionary-maker, without knowing them to have been really and actually used, but reasonably conjecturing that they might, could, would, or should be used at some time or other, has thought fit to admit into the language by anticipation. But others of them simply perpetuate the dictionary-maker's own bad writing, or the blunders of his printer; and as all dictionaries hitherto have been largely copied from their predecessors, the mistakes of one lexicographer have been systematically perpetuated by his successors, and might well have continued to be embalmed in dictionaries until Doomsday if their true nature had not been made clear by this new method of dictionary-making.

Bacon, in his *Natural History*, uses the word *adventive*,

meaning *adventitious*. The second *v* was at first printed, after the manner of that age, like a modern *u*, but in the edition which was used by Johnson this *u* appears to have been accidentally turned upside down in the printing. The consequence is that Johnson created a dictionary word *adventine*, and has bequeathed it to all dictionary-makers ever since.

There is found among the compounds of *high* a word whose commonest form is *high-taper*; it is the name of a plant. It has several by-forms, in one of which it takes the shape of *higtaper*. Now it would appear that some dictionary-maker, once wishing to include this word in his collection, took note of it and set it down in writing, but he forgot to cross the *t*, and the result is that, from the time of Ainsworth at any rate, there has been in dictionaries a word *higlaper*, which still maintains an existence there which it never possessed anywhere else.

The dictionary materials very seldom fail altogether to illustrate a word, however recondite it may be, for the simple reason that recondite words, senses, and uses are precisely those which are sure to have arrested the reader's attention, and to have been represented in his slips. But it is quite frequent to find the commonest meanings of a word very sparsely illustrated, and still oftener does it happen that large gaps exist in the chronological series of quotations illustrative of any given meaning. It is especially remarkable how often there is such a hiatus in the eighteenth century, and that clearly not for want of ample literature, but because readers generally did not care to read eighteenth century books. The truth is, perhaps, that to us the eighteenth century is neither new nor old—it has neither the interest of novelty nor that of antiquity; it is illuminated by great talents, but by little genius, and the intellectual paternity of the nineteenth century is seen far less in its

immediate predecessor and progenitor than in its earlier ancestors, the sixteenth and seventeenth. Be that as it may, the fact is certain that the eighteenth century was not read with anything like the completeness of the rest, and the task of hunting up the desiderated quotations is generally quite beyond the scope of the individual sub-editor's powers and opportunities. It must perforce stand over, with other tasks only partially indicated here, until the scene of action is once more transferred to the headquarters at Oxford.

The slips for each meaning being now in a separate parcel, chronologically arranged, are pinned together at the left-hand lower corner, with a blank slip in front to receive the definition. Certain rough definitions, of course, have already been adopted, in order to facilitate classification according to meaning, but it is always necessary to read through the slips of each class a second time before finally adopting the definition to be placed at their head. The quotations are, at the same time, carefully weighed during the perusal, and a certain number of them, amounting to about one in each century for every meaning, are marked with a cross in the right-hand upper corner, to indicate that they are considered to be the most suitable to be made use of as illustrations in the dictionary.

When the definitions have been duly settled, the next business is to arrange them in consecutive order, and to number them accordingly. And here there is a departure from the otherwise strictly historical order of treatment which users of the dictionary would do well to take notice of. The several meanings are marshalled, not in *historical*, but in *logical* order, which is not always exactly the same thing. Users of the dictionary should therefore beware of thinking that the quotation which stands first under the first meaning is necessarily the earliest quotation for the word. It sometimes happens that the word comes to us first in a

secondary meaning which will be found much further down the list.

Two matters remain still to be dealt with before the treatment of the word can be considered to have been fully sketched out. The one is the pronunciation, and the other the etymology, but the former of these is not dealt with by the sub-editor. The only trace of it which is to be seen on the sub-edited materials here exhibited is the empty bracket placed immediately after the "typical form" of each word, and destined hereafter to contain the pronunciation, duly transcribed into the special characters adopted by the editor for that purpose.

It is optional, also, with the sub-editor, whether he deals with the etymology, or simply leaves space for the editor to do so. So far as it is elucidated by the slips themselves the sub-editor is undoubtedly the best person to deal with it, and may do the editor much service by summarising the evidence thus placed at his command; and in all other cases, too, where the course of derivation can be traced without uncertainty, it is just as well that he should do so; but in doubtful cases it is best to leave it over for later treatment at the hands of the editor, who, if it can be settled at all, will have the latest and amplest facilities for doing so. The point aimed at in these etymological particulars is just to state as concisely but completely as possible how the word became English, and to account for the form in which it first occurs. Its backward history in other languages is never pursued any further than this aim necessitates; nor are any collateral foreign forms adduced unless they also throw light upon its purely English development.

The former parcels which I sent to Dr. Murray were full of interesting etymologies, but in the word *high* of course there is but one etymology, and that of no extraordinary interest. The word reminds one however of the old semi-

theological theory that all languages were derived from the Hebrew. Marsh in his *Lectures on the English Language* tells us that the word *high* was one of those which were relied on to shew that such was the case even with English: for was not one of the sons of Anak called A-hi-man?

The stages now enumerated complete the sub-editor's treatment of all words except those like *high*, which are important enough to have attached to them a series of phrases or a body of compounds. The way in which these are dealt with will be better seen by a glance at the dictionary itself than from any written explanation here. The compounds of the word *all*, or *back*, or *black* will afford excellent illustrations. The main principles of treatment are to explain or paraphrase the phrases, and give chronological illustrations of each; to divide the compounds into classes according to their mode of derivation and their parts of speech: and then to arrange them in alphabetical order, also with illustrative chronological quotations, giving a brief explanatory note to any which are not made sufficiently clear by the context. The number of compounds thus attaching to the word *high*, including fifty-four which find a place of their own in the list of principal words, and nine which are really sub-compounds of *highland* and *highway*, is no less than three hundred. Add to these the one hundred and thirty phases of the principal word, which have been previously dealt with, and allow for the fact that the fifty-four principal derivatives are on the average distinguished into three or four different senses; and it will be seen that the final result has been to convert the first indiscriminate mass of "*high*" quotations, which must have numbered at least two thousand, into an orderly arrangement of more than five hundred ultimate sub-divisions, each having its own definite place and portion in the logical and grammatical hierarchies wherein they were predestined to be ranged.

ON THE ORIGIN OF THE RELIGIOUS IDEA.

BY JOHN NEWTON, M.R.C.S.E.

I SUPPOSE there is no one present who has not been struck with the prevailing unrest of our times. To those who have passed the meridian of life, it must have often come as a painful shock to see their most cherished beliefs treated by the leaders of science and of public opinion with ill-disguised or open contempt, and denounced as behind the age. It would be easy to multiply examples. Thus Professor Clifford, for instance, has repeatedly published it to the world that there can be no God, because He is not found as a force in the universe, which can be weighed or measured. And some of our poets follow in the same path. Arthur Clough says or sings :—

He is only a cloud and a smoke, who was once a pillar of fire,
The guess of a worm in the dust, and the shadow of its desire.

Matthew Arnold, indeed, has tried to compromise matters by introducing a new patent faith of his own, suited to an age of doubts and compromises, but which is no faith. Instead of a personal God, we are to venerate “the stream of tendency, not ourselves, that makes for righteousness.” Instead of Religion, we are to cultivate “morality tinged with emotion.”

The religious idea, however, remained, seeking an object for worship, a tremendous power over mankind, in every clime and age; this had to be accounted for, or explained away somehow. Nor can it be alleged that the atheists and doubters of our times have altogether evaded this difficulty.

Not to mention the theories of Comte and Taine, and Strauss, we may notice that adopted by Professor Huxley, the founder of Agnosticism, who long ago (in his *Lay Sermons*, 1870), published his belief that religion took its rise in ancestor-worship. The same theory has been adopted by Herbert Spencer, who has lately devoted a bulky volume to establish the position "that ghost-propitiation is the origin of all religions."*

If we turn to Paley's *Natural Theology*, published in 1802, to see what he had to say on this question, we find that he quietly ignores it, and for a very good reason, which well illustrates the enormous progress of knowledge within the last eighty years. The Hebrew cosmogony was then generally received as the true one, according to which all this visible universe was created in six days : the earth being first formed ; afterwards, on the fourth day, the sun and the moon were made to light the earth by day and by night, and the stars were thrown in. The first pair of the human race, made in the very image of God, were placed in a lovely garden, in which God himself walked at the cool of the day. They were at once endowed with the divine gift of language, and instructed in theology, everything, so far, promising a golden age of happiness and peace. But evil crept into this paradise, in the form of a serpent, gifted with persuasive human speech. They listened to him, disobeyed their Maker, and thus

Brought death into the world, and all our woe,
With loss of Eden.

Such was the history of the creation of the world, which was universally held at the beginning of this century. It was received as of divine authority, and the final arbiter on all

* *Ecclesiastical Institutions*, p. 675, and *Principles of Sociology*, vol. i, p. 411.

points related. Accordingly, all the innumerable systems and forms of religion, except that of the Jews, were considered as corruptions of the primitive revelation ; and this tremendous question, the origin of the religious idea, was supposed to be thus settled at once. Paley, indeed, puts admirably the old argument from the appearance of design in nature, as proving a great Designer and Artificer of all, which had been urged thousands of years before by the Hebrew psalmist and the Greek Socrates, but the first step towards a theology he never discusses. He was writing for an age that knew nothing of our doubts or our difficulties, for all has changed, such is the marvellous progress of knowledge in these latter days.

Thus we now know that this earth of ours is but a speck, an atom in the universe, altogether invisible from the nearest fixed star. It was probably thrown off from the sun myriads of ages ago, and after long circling round the sun in fiery brightness, at length cooled down sufficiently on the surface to become fit for the abode of life. That life has been built up in ever-increasing complexity and perfection of endowments, from the simplest form up to man, who seems to us the crown and end of creation. All living things have formed one continuous chain of being, and though many links here and there may be lost to us, sufficient living and fossil forms remain to establish that the higher forms have not been created independently, but that they have sprung from the lower by a natural process of gradual development. This great truth was first published by Darwin thirty years ago, who shewed that the main causes at work producing new species of plants and animals were these:—First, *the variableness of all living things*. We say, “as like as two peas,” but no two peas are exactly alike ; there is a constant tendency of the individuals even in the same species (take the human race, for instance) to vary within a certain con-

siderable range. Now, Malthus first pointed out that all living things tend to multiply much faster than their food. Many more individuals are born than can possibly survive,—so that a *struggle for existence* is taking place everywhere ; the weak, the puny, the unfruitful, those deficient in cunning or in means of defence, or otherwise worse fitted for the battle of life, perish, are weeded out ; whilst those possessing any favourable variation which fits them better for the complex and varying conditions of life, survive. This is called *natural selection*, or the survival of the fittest. And the *selected variations, hereditarily transmitted*, accumulating through many generations, have given rise to new species. The great difficulty in the way of the general reception of Darwin's theory as to the origin of species, arises from our natural repugnance to the idea of its applicability to the human race. But that it does so apply—that man was developed from some lower form—that there is no impassable gulf separating us from all other living beings, is shewn by innumerable facts. Each human being commences his independent life exactly like all plants and animals, as a microscopically minute cell or particle of protoplasm. He passes through stages in the embryonic form almost identical with those of the lower animals, at one time resembling that of the lizard, at another of the dog, and some traces of these transitional forms thus passed through remain permanent, though useless to us. A very remarkable instance of this has been discovered within the last four years. Near the centre of the base of every human brain is a remarkable body, about the size of a small hazel-nut, which—from its resembling in shape a fir-cone—is called the pineal gland. Its use was long a puzzle to physiologists. Descartes suggested that it was perhaps the seat of the soul. It has now been ascertained that from this part of the brain was supplied the optic nerve to a central eye. This eye appears

in a rudimentary form in some lizards and worms; but in the labyrinthodon and other fossil reptiles this central eye was fully developed. The pineal body is therefore all that remains in the higher animals, and in man, of that which, in long past ages, was developed into an important organ of vision. And thus man bears within him incontestable proofs of his descent from lower forms.

I need scarcely allude to the mass of evidence which has been accumulating for forty years, since Boucher de Perthes startled the world by publishing, in 1847, the results of his excavations at Amiens, which proves that the human race, though so recent in geological time, must have existed for tens, probably hundreds of thousands of years before the dawn of history, and that the earliest remains show him to have been for long ages a savage of the lowest type, using sticks and stones as his weapons, keeping his head above water as best he might, preying upon things weaker or less cunning than himself, like the animals around him, and thinking but little of whence or whither. Also, primitive man knew nothing of language, in our sense of the term, for, as Professor Sayce observes, all the languages that have come down to our time bear unmistakable evidence of their late origin.

Thus, then, the Hebrew cosmogony has been disproved, bit by bit, till nothing remains, and we have to account for the origin of the religious idea, without its aid, as best we may. Even the old argument from the evidences of design in the structure of animals, was considered by Darwin as completely set aside by his great discovery of the law of Natural Selection. Thus the human eye, the most perfect camera ever made, forming an exquisite picture of the outer world upon the nervous expanse of the sensitive retina, and thus transmitting it to the brain, is only the last and most elaborate of a long series. Beginning with living beings

which appear to us only animated masses of jelly, possessing no organs of special sense, we find in others one or more reddish spots, which are more sensitive to light than the general surface of the body. In others, where these organs are becoming differentiated, a lens is developed, and so on as we ascend the chain of being, until at length that complex organ, the vertebrate eye, appears. The steps are very gradual—each organ of vision at every stage being well adapted to the needs of the individual—the higher forms being evolved from the lower and simpler by that marvellous plastic power of adapting themselves to varying conditions of life which is characteristic of all living things, and which is one of the chief factors in “Natural Selection.”

It is plain, then, that the old explanations are more or less obsolete, and that we must seek for new ones in unison with the knowledge of our time. Let us look at the facts fairly in the face. One thing is certain to start with, that religion in some form must be amongst the primitive instincts of humanity; as much a part of ourselves, for instance, as the social instinct.* Almost as soon as we know anything of the thoughts and feelings of man, with the first dawn of literature and the arts, we find him in possession of religion, or rather possessed by religion. The oldest literary documents are almost everywhere religious. Our earth, as Herder says, owes the seeds of all higher culture to religious tradition. When the Spaniards first discovered the New World, they were amazed to find that the Mexicans and Peruvians had great temples dedicated to the worship of the sun, with priests and sacrifices, and an elaborate ritual.

* “Instinct is reflex action into which is imported the element of consciousness. It results in *conscious and adaptive action antecedent to individual experience*, without necessary knowledge of the relation between means employed and ends attained; but similarly performed under similar and frequently recurring circumstances by all the individuals of the same species.”—Romanes, *Mental Evolution in Animals*, p. 159.

And so it has been all the world over—no nation has ever yet been discovered without a religion. It must, therefore, be a perfectly natural idea, must meet a common instinct, and satisfy, more or less, an universal need.

What, then, is the essence of the religious idea, which is present in every form of faith, from the lowest idol worship to the highest and most spiritual adoration? Many have attempted to define it, and more have given up the attempt. Yet if the idea be incapable of definition we cannot reason upon it, anymore than we can use a bank note for payment which has not its full value plainly stamped upon it. Schleiermacher defined religion to consist in our consciousness of absolute dependence upon something; and no doubt there is much truth in this. But the religious idea includes much more: it always implies worship, propitiation of one who is supposed at the time to rule the destiny of the worshipper.

I would venture to define religion simply as *the worship of a being who is regarded as wiser, higher, mightier than ourselves*. This, I think, would include every universally recognised form of religion.

Max Müller defines it thus*:—"Religion is a mental faculty which independent of, nay, in spite of, sense and reason, enables man to apprehend the Infinite under different names and under varying disguises. Without that faculty, no religion, not even the lowest worship of idols and fetishes, would be possible; and if we will but listen attentively, we can hear in all religions a groaning of the spirit, a struggle to conceive the inconceivable, to utter the unutterable, a longing after the Infinite, a love of God."

One cannot help being fascinated with everything written by so eloquent and learned a writer, but I am afraid this defi-

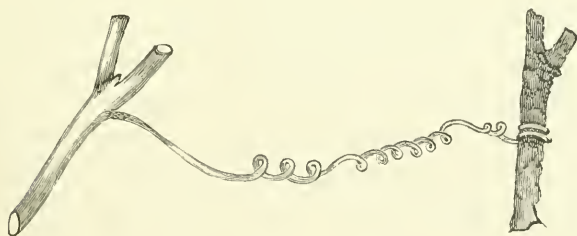
* *Introduction to the Science of Religion*, 1873, p. 17. *Hibbert Lectures*, 1878, p. 23.

nition will help us little. It is utterly unscientific, for it supposes a new faculty—that of apprehending the Infinite—absolutely confined to man, and to which there is no analogy in animals; as indeed he strenuously maintains. But if the far reaching theory of Darwin be true—and it is now almost as universally received as Newton's theory of gravitation—then there has been no break in the chain of life, which begins in the lowliest living thing and ends in the highest; and something analogous to the religious idea must be traceable amongst animals, yes! even in plants.

Bearing this in mind, let us start from that which sets the entire world of the living in motion, the common struggle for existence. Every healthy living thing endeavours to make the best of life, to have his full share of Nature's feast. And if he fail—then comes the question of causation. If I haven't it, why not? This terrible question is continually coming to the front—often it is a question of life or death. It must be answered. And the inevitable result is *the endeavour to propitiate, to gain over to his side, every power that can help him or harm him*. Here, then, we have a natural instinct, not merely the result of education or experience; and as certain to be always exhibited as that the drowning man will cling to anything that looks stronger, stabler than himself. Here, then, at any rate, we are on firm ground, presupposing no new faculty, but starting from one of the most elementary instincts of all living things. And we will begin with the lowest.

But, indeed, the vegetable world is as prolific as the animal of ingenious devices for securing the preservation and happiness of the individual and for multiplying its kind. And here, at the bottom of the scale, we shall find some of those instincts showing themselves, which in the highest develop into religion—the consciousness of personal weakness, of the need for support, the search for and clinging to those

stronger, higher, mightier than themselves. This is well seen in all climbing and twining plants. According to Darwin, the power is inherent in the whole vegetable kingdom but is only developed by those which need it. These have contrived various devices for assisting them to climb and to cling; such as sensitive tendrils, hooks, suckers, sticky secretions, rootlets, by which they are enabled, as in dense forests, to mount to the tops of the highest trees in search of light and air; or in the open country, more humbly to steady themselves as they grow and increase. Darwin's most interesting book* is full of marvellous instances of intelligence in these climbing plants. Of the Bignonias, he says: "Each tendril or shoot ends in three highly sensitive toes, with claws, like those on a bird's foot, and the whole tendril slowly revolves in search of something to cling to." "Many things I offered they refused, but they clung readily to stout branches or posts bored by beetles or rough with bark." "The ends of the tendrils exhibit a singular habit, which in



an animal would be called an instinct; they continually search for any little crevice or hole into which to insert themselves," and thus get a hold. "The same tendril will frequently withdraw from one hole and insert its points into a second hole." Again, he says:—"I have more than once gone on purpose during a gale to watch a Bryony growing in

* *The Movements and Habits of Climbing Plants.* By Charles Darwin.

an exposed hedge, moored by its elastic tendrils to the surrounding bushes ; and as the branches were tossed to and fro by the wind, the tendrils, had they not been excessively elastic, would instantly have been torn off, and the plant thrown prostrate. As it was, the Bryony safely rode out the gale, like a ship with two anchors down, and with a long range of cable ahead, to serve as a spring, as she surges to the storm."

When we observe the higher forms of life, the same primitive instinct (of the weaker to attach itself to the stronger) is, of course, still more evident. It is, to some extent, the foundation of our success in subduing and domesticating animals. Man goes forth into the world, where life is a free fight, and he selects the best and brightest, those which attract him by their superior intelligence, or strength, or beauty, or by possessing some other quality or thing which he desires to make use of. These he endeavours to win over to his side,, ensuring them in return shelter and protection, food, and all else that they need. And they appear to have concluded that, on the whole, it was a bargain for their advantage ; they have learned to obey his commands, and to render him more or less willing service. By the association with a far superior intelligence, some of them have been lifted up to a higher mental state. They, who before acknowledged no will but that of the strongest, have become amenable to the will of a higher nature, and have thus imbibed some of our best qualities, love, reverence, obedience to law.

Here, then, we have a religion according to the usual meaning of the word—*worship and obedience rendered to a higher power*. Let us think of it as we see it every day in our dog or cat. The dog rests content with having discovered in his master the controller of his destiny, the visible ruler of all, and he worships him as his god. By

many an act of propitiation, by many a mark of love, he tries to gain his favour, even by laying some offering at his feet. He knows his voice and the sound of his footsteps. If his master be away he will cling to his shoes or his garments—relic-worship; or he will make long pilgrimages after him, if haply he may find him. If he be beaten, he receives it with humility; if he be caressed, his joy is unbounded. Surely the dog has a religion! And the reproach of the Hebrew prophet is at least natural:—"The ass knoweth his owner, and the ox his master's crib, but Israel doth not know, my people doth not consider."

Another primitive instinct, possessed by all living beings in some degree, is here engaged—the *universal idea of causation*, that every event, every phenomenon, is due to something else, which is related to it, as the cause; and their lives, like ours, are one long lesson, a search into the causes of things. Thus a young dog, which at first flies at the stick that strikes him, soon discovers his error, and in future always flies at the person who directs it. So your dog and cat have put things together in their own minds, and have concluded that you are the ruler of their little world, and that they cannot do better than worship and obey you. A cynical friend of mine taught his dog to beg before an image when it wanted food. He might have spared himself the trouble, for the dog would always see the living master and lord behind the image.

And now we come to another chief source of the religious idea. *Every living thing must have its ideals*, to achieve which it works, more or less. We shall consider them, for brevity's sake, as two—the ideal of happiness and the ideal of perfection. The ideal of happiness may be only a better place and a bigger slice at Nature's feast, a little more sunshine and air, a snuggler dwelling; but it is there all the same, or the individual would cease to work. The struggle

for existence is a struggle upwards. Retrogression indeed is frequent enough, and seems as likely as progression ; and the mere fact that the tendency has been on the whole slowly yet decidedly progressive, is surely proof of a higher purpose and end to which all are tending. Abundant illustrations might be given from the vegetable kingdom alone. Thus some of the higher plants have developed habits like those of animals. They snare and catch insects by many most ingenious devices and then digest them !

Or if we ascend higher, and turn to the more intelligent insect tribes, already we find that they have developed highly complex civilizations, and forms of government. Take the ants. Well might Darwin say :—" The brain of an ant is perhaps more marvellous than the brain of a man." They construct elaborate boarding-houses, each accommodating many hundreds, which are also factories and stores, provided with stables for the little green insects which they keep as milch cows ; and a number of these ant-hills are often grouped together, forming a great city. Each of them is provided with entrances guarded by sentries, and all the ants of the same community are well acquainted and friendly, but any strange ant they attack and kill. They form extramural cemeteries, in which they bury their dead with some ceremony, but never inter their foes with their friends. Their larvæ they hatch and nurse with great care, keep them clean, and educate them in domestic duties. Nineteen species of ants are known which gather grain, winnow it from the chaff, and lay it up in storehouses as food for the winter ; having first prepared it by some process unknown, which prevents it from germinating. These are only a few of the marvels to be told of those wondrous insects. Truly might Coleridge exclaim :—" Who that hath watched their ways with an understanding heart could contemplate the filial and loyal bee, the home-building, wedded, and divorceless

swallow, and, above all, the manifoldly intelligent ant-tribes, with their commonwealths and confederacies, their warriors and miners, and not say to himself—Behold the shadow of approaching humanity! the sun rising from behind in the kindling morn of creation! Thus all lower natures find their highest good in semblances and seekings of that which is higher and better.”

If we turn now to the other ideal, the feeling for beauty, for an ideal perfection of form and colour, is it not seen everywhere throughout the world of the living? To begin at the bottom of the scale. Why do the Diatomaceæ, which are but particles of animated jelly, build themselves houses which are miracles of beauty, yet were entirely unknown to man until the microscope revealed them? Has the flower no delight in its own beauty as it drinks in the glorious sunshine, and gives it back in gorgeous colours and sweet perfumes? Or the bird in its own music, as it warbles its song in the season of love? It cannot be, for instance, that male birds of paradise or peacocks should take such pains in erecting, spreading, and vibrating their beautiful plumes before the females for no purpose. For it has been observed that a female deprived of the mate whom she had chosen remained a widow for the rest of the year, refusing to pair with another bird. The female then was endowed with some feeling of delight for beauty in colour and form. Thus, some ideal of perfection is universally possessed which could not have been derived from mere utility, and which has resulted in filling the world with an infinite variety of colours and forms of surpassing beauty and grace.

Other primitive instincts, traceable through a large part of the world of the living, such as the parental instinct, and the social feeling which attaches us strongly to those of our own species, might here be dwelt upon, since they are all found attaining their highest development in Religion. Man

has no monopoly, he but shares in the common life, and his starting-point is the same as the rest. Even the beginning of morals might be traced indefinitely downwards. Involved in the primitive cell is the principle of choice, of affinity, of like and dislike, best and not best, right and wrong, of a code of ethics within the small round of its life. This choice involves an ideal, a little advance, however lowly, towards which it would tend, and an active search for the means of attaining it, including, as we have seen, some sense of beauty and perfection.

But we will now advance a step farther, and consider the origin of the Religious idea in man. Surely the fundamental idea that underlies all religions is the natural desire to propitiate, to gain over to our own side, every power that can help us or harm us, the mightier the better; and man looked abroad into the world ever in search of more powerful allies. It was bodily fear and hunger that made primitive man religious, rather than a yearning after the Infinite. A good illustration of this is given by Dr. Guppy (*The Solomon Islands*, 1887). Sharks abound in the seas off the Society and Solomon Islands, and occasionally commit fearful ravages amongst the natives. A new religion has sprung up; they worship the shark, propitiating its favour by offerings. Images of the shark god appear in their temples, or tambu houses, and small figures of it are worn as amulets. Almost every family has its particular shark as its tutelary deity, to which it bows and makes oblations; and if a sacred shark has attempted to seize a man, who has been able to escape from its jaws, they will throw him back into the sea to be devoured, as a sure means of securing the favour of their god.

To primitive peoples, as to children, everything that moves is alive, and everything is endowed with human intelligence. The child beats the chair against which he has

knocked his head, and afterwards kisses it in token of renewed friendship ; in the full belief that, like himself, it is a moral agent, amenable to rewards and punishments. We are told that in India the labourer sacrifices to his spade, the soldier to his sword ; even as in his day the Hebrew prophet Habakkuk, saw the Chaldean fishermen worshipping their nets for good success. "Therefore," says he, "they sacrifice to their nets, and burn incense to their great dragnets, because by them their portion is fat, and their food plenteous."

Thus all the great powers of nature, everything that seemed to rule their destinies, whether for good or evil, even diseases, became objects of worship and propitiation. Cicero (*De Natura Deorum*) tells us that in his time the Roman captains sacrificed to the waves before they embarked. But, above all other visible things, the glorious sun, the source of life and light to our earth, has been most universally adored. Mankind watched with rapture its rays gain strength daily in the spring, until the golden glories of midsummer had arrived, when the earth was bathed during the longest days in its beams, ripening the fruits which its returning course had started into life. When the sun once more began its course downwards to the winter solstice, they sorrowed ; for he seemed to sicken and grow paler at the advent of winter, when his rays scarcely reached the earth ; and all nature, benumbed and cold, sank into a death-like sleep. Hence feasts and fasts were instituted to mark the commencement of the various phases of the solar year, which have continued from the earliest known religions under various names to our own times. Sun-worship appears to have prevailed over all the ancient world. It mingled with other faiths, and assumed many forms. Thus the sacred day of the Christian is still Sunday and all the other Christian festivals, such as Easter and Christmas, have taken the place of solar festivals.

Our churches are still built due east and west, like the ancient temples of the sun ; and the revival by some of our clergy of the old custom of the priest turning to the east has almost rent asunder the English Church. It would scarcely be an exaggeration to say that of the religious emblems known one-half are more or less sun emblems.* The oldest Aryan word for God *dyaus*, (compare the Greek Ζεύς, Θεός, Latin *Deus*), meant the bright, the shining one, a fit name for the sun, or the luminous heaven. Besides the sun, the moon, and the earth have been among the chief objects of nature-worship.

Then came another stage in religion. That intense sympathy for their own kind which exists throughout the animal world—which we saw in the child transferring his own nature to everything that moved, soon changed the face of religion. Mankind conceived of the great powers of nature as human, thus reproducing themselves as a glorified humanity, in their attempts to rise to the ideal of a higher existence. And since they saw that to the sun's rays, and the showers from the sky, all the fruitfulness of the earth was due, they called the fertilizing power—the Heaven-Father, who is the starting-point of every theology ; whilst the earth, the bringer-forth, they called the Earth-Mother, Γη-μήτηρ = Δη-μήτηρ, the result of their union being all life, including its highest form, man. Thus the chief object of Egyptian worship was Osiris, the sun, the father. Isis, the earth-mother, bearing the crescent moon on her head. And between them, or in the arms of Isis, was represented Horus, the god-child. (Osiris represented the setting sun, the sun of winter, and of the under world. Horus, the rising sun, the sun of spring.) Here, then, was a reasonable theory of things. Nature to these worshippers was no

* For many illustrations see my paper on "The Armorial Bearings of the Isle of Man," in our *Transactions*, vol. xxxix.

longer a riddle, and the entire cycle of human life was reproduced in the final triad of gods.



I have much more to say on the Ancient Religions, and could show how naturally they all result from the primitive instincts which we have been considering; but this would require a volume instead of a paragraph in a brief essay. Sufficient, however, has been said to show how human they were; since, from our poor limited stand-point, we can best see God through humanity.

And this leads me to say that if religion spring from the consciousness of personal weakness, the need for support, the search for and clinging to those higher, mightier than ourselves, then children and women should be the most religious—which is exactly what occurs. Our first lesson in life is one of utter dependence. To young children, their mother is their Providence, their Deity, the representative to them of all tenderness and all authority. Our earliest lesson, therefore, is a religious one, and there is some truth in the

proverb that "an ounce of mother is worth a pound of parson." As to the fair sex, Pythagoras testified of old "that piety is the peculiar possession of women;" and Strabo that "all δεισιδαιμονία (fear of the gods) proceeds from the female sex." And for our own day, we may quote the emphatic words of M. Jules Simon, in this month's *Fortnightly Review*:—"Whatever faith, and whatever veneration we still have in France, we owe to our women." To the same qualities Mrs. Hemans alludes, when she says it is woman's lot

"To make idols, and to find them clay."

But it is so with us all. When we are most conscious of our own weakness, then are we most religious. Jacob, wandering in the desert of Padanaram and oppressed by a sense of his own helplessness, turned to the God of his fathers:—"If God will be with me, and keep me in this way that I go, and will give me bread to eat, and raiment to put on, so that I come again to my father's house in peace, then shall Jehovah be my God."

Another instinct which man possesses only in common with animals, is *the idea of causation*, inducing him to search into the causes of things. And this has been one source of the religious idea. Many of us, no doubt, visited Maskelyne and Cook's exhibition. We saw the mystical lady, a figure on a stand, which played correctly at cards, and drew clever portraits. We puzzled our brains to understand how this was done, and failed, like every one else. Yet we were certain that there was a hand behind the veil, and that all this was somehow the result of a human will. And so, when we consider this wondrous world, so filled with proofs of order and design, our minds naturally image to themselves a great Designer and Lawgiver. The tendency of mankind would be not to conceive of Him as some vague, all-pervading force,

but as a Being who could be adored and propitiated. As the Psalmist puts it:—"He who hath fashioned the ear shall he not hear? He who formed the eye, shall he not see?"

Darwin sometimes thought that the old argument from design for a personal God fails, because the exquisite instruments of our bodies, the human eye for example, are not new creations, but only the last of a long series, commencing in the simplest forms. Again he says, how can we assume an intelligent Designer when we find for instance wings in insects and birds that never fly, or the breasts of male animals? We might as well say there is no proof of design in some exquisite painting of Raffaele's because we possess most of the preliminary sketches for it, and some of these appear mere scrawls. What right have we to call anything an abortion, a failure, which is from the hand of a great artist? These were all further steps towards a finished picture, and the first stroke was evidence of design as complete as the last, if we could have had the wit to see it. Again, that is the highest art which accomplishes the most with the least labour. And this is the plan pursued throughout nature, no further changes being made on the archetype than are sufficient to fit the creature for his environment, for his place in the world. What can appear a greater waste than the burial of those vast forests, which remained for millions of years in the earth entombed and idle? Yet they now form the fuel which gladdens us with light and heat, and is the chief material element in our civilization.

Again, it is urged:—How can you harmonise your belief in a beneficent God with the presence of so much evil and suffering in the world? This difficulty has been felt in all ages. The ancient Persians attempted to meet it by supposing a spirit of darkness and evil—Ahriman, who was continually endeavouring to thwart the good god, the spirit of light—Ormuzd. The ancient Greeks, who worshipped

only beauty and perfection, and admitted nothing hideous into their religion, provided no devil. But they told how, by command of the gods, Prometheus and Epimetheus fashioned all living things out of earth and fire, water and air, and made many mistakes in the mixing. In our own times, the orthodox Paley, confronted with these difficulties, admitted that the supreme Creator having imposed his fixed laws and limits upon all things, may have left the carrying out of the details to subordinate agents. We cannot but recall the passionate cry of King Arthur in Tennyson's poem :—

Ah me ! for why is all around us here
As if some lesser god had made the world,
And had not force to shape it as he would.

And what shall we say to all this ? What can we do but be content to learn and wait. The empire of chance is growing less every day ; where our forefathers saw nothing but dire confusion, we have learned to see universal law ; to become a Providence to ourselves ; and to employ the forces of nature, once dreaded, as instruments to promote our health and happiness. Surely then, we may have faith to believe that

All nature is but art unknown to thee.
All chance—direction which thou canst not see.
All discord—harmony not understood.
All partial evil—universal good.

We have already dwelt on that ideal, which is a natural possession of every healthy living thing, and which is always before it. And man, too, has his destiny shaped by his ideals, without which progress is impossible. It is as the pillar of fire before the Israelites in their march through the desert, ever beckoning them onwards. Unhappy the animal, the man, the nation, that has lost its ideal ! Those which

have the most elevated ideal, and which strive to attain it, will get on best in the common struggle for existence, and thus the religious instincts will be "selected" and increased. The art of any age (as has been truly said) depends not upon its knowledge, but upon its ideals of faith and hope. Our ideas of heaven are attempts to depict a golden age of happiness and perfection which we yearn after but never see. To the Agnostic, to the Buddhist, there can be nothing to look forward to but a dreary Nirvana—mere annihilation. To early Judaism there seems to have come no vision of a brighter future than one "where the wicked would cease from troubling, and the weary be at rest:" to the later Jew, the shelter of "Abraham's bosom." This tranquil haven is in striking contrast to the heaven of the fiery Northman, where fierce battles were to be followed by feasts and revelry. To the Moslem came dreams of an immortal manhood, passed in a sensual paradise. Thus have men transferred to a future beyond the grave the ideal happiness never realized on earth. Every artist, painter, sculptor, musician, poet, is haunted by visions of perfection, which his highest efforts fall miserably short of. Whence came they, these haunting ideals of a perfection which we cannot reach?

There can be but one answer. They come from the invisible source of all perfection, the fulfilment of every ideal. "Be ye perfect, as your Father in heaven is perfect."

This truth was clearly seen by Plato, 400 B.C., who represents Socrates as thus teaching:—"All other things are beautiful only through their participation in this—the supreme Beauty. For such as discipline themselves to ascend through these transitory objects which are beautiful, towards that which is beauty itself, proceeding as on steps from the love of one form to that of two, and from that of two to that of all forms which are beautiful, and from beautiful forms to beautiful habits and institutions, and from insti-

tutions to beautiful doctrines, until from the meditation of many doctrines they arrive at that which is nothing else than the doctrine of the Supreme Beauty itself; in the knowledge and contemplation of which, at length, they repose." Let us add to this exquisite passage from the heathen Plato, that in which Newman, the Christian philosopher, traces the origin of music in his University Sermons. He says: "Is it possible that that inexhaustible variety of notes, so simple yet so majestic, should be a mere sound, which is gone and perishes? Can it be that those mysterious stirrings of heart, and keen emotions, and strange yearnings, after we know not what, and awful impressions from we know not whence, should be wrought in us by what is unsubstantial, and comes and goes and begins and ends in itself? It is not so! It cannot be! No! they have escaped from some higher sphere; they are the outpourings of Eternal Harmony, through the medium of created sounds; they are echoes from our home; they are the voice of angels; or the Magnificat of saints; or the living laws of Divine governance; or the Divine Attributes. Something are they besides themselves, which *we* cannot compass, which we cannot utter; though mortal man, and he perhaps not otherwise distinguished from his fellows, has the gift of producing them."

As Newman sees with Music, so of every good and perfect gift. It is chiefly given to us through human agencies, and through humanity we best realise God. Only by our experience of the incessant, unwearied, unselfish love of a mother, the tender providence of a father, the help of friends, can we realise the unceasing love and providence of our Heavenly Father, whom no mortal eye hath seen or can see.

Christianity reveals to us a personal God, with qualities that appeal to the noblest and tenderest susceptibilities

of our hearts. And the Christian idea, uniting in itself the noblest elements of all other religions, shews us divinity revealed through humanity as the most complete revelation of God man can receive.

Let us turn for a moment to consider the theory advocated by Herbert Spencer, "that ghost-propitiation is the origin of all religions" (*Ecclesiastical Institutions*, p. 675). It is obvious at once that, if this theory be true, then all religions, in all ages, have been founded upon a falsehood, and the sooner they are all swept away the better. Thus, until Spencer arose and shewed us our folly, we, like all mankind for countless ages, have been

Letting buckets down to empty wells,
And growing old in drawing nothing up.

As to the religious history of the world, it is only a history of delusions, and man himself

A wandering shadow in a world of dreams.

To the Christian, these ancient faiths assume their place in the religious education of mankind. To Mr. Spencer, all alike are dust and ashes, the present age disjoined from the illimitable past, and both wandering on without aim or end. A melancholy conclusion, truly! Was it worth all this labour?

For we have seen that the religious feeling is founded upon the instincts that we share in common with animals, but a belief in ghosts—still more, ghost-propitiation—is unknown amongst animals. If he had maintained that religion was founded upon hero-worship, a much stronger case might have been made out. Every soul, greater and nobler than his fellows, helps them to a diviner ideal; and this is surely on the road to a religion. Hero-worship, as well as ghost-propitiation, is a consequence of those instincts

which develop into religion; the feeling of personal weakness, the need for something mightier, stabler, wiser than ourselves to cling to, to follow; with the natural desire to propitiate such an one, which becomes a true worship. Spencer has fallen into the error of taking a particular delusion, often found associated with religions, and has represented it as the foundation of the religious idea! Religion is many sided,—a mighty ocean, fed by many streams.

It is sad and yet there is something grotesque in it, to see how men try to be Atheists and cannot. The religious instinct is too strong for them. Thus the French nation, when they had cast off religion, made a goddess of Reason, erected a statue of the goddess, which was drawn through the streets of Paris, with incense and hymns and worship. . . . Comte, who invented Positivism, or the worship of Humanity, after deserting his wife formed a passionate attachment to the wife of a man sentenced to the galleys, and erected her, together with his mother and his cook, on a joint pedestal of fame, as forming a virtuous ensemble of three perfect feminine types. Not only so, but this contemner of the *Être Suprême* built to his divine Clotilde an altar in his room at which to offer prayer, he made pilgrimages to her tomb, and dedicated to her a commemorative anniversary. The high priest of Positivism in England, Dr. Congreve, officiates at regular religious services, for which he has compiled a liturgy, in which Humanity is addressed as “the Queen of our devotion, the Lady of our loving service, the one centre of all our being, the one bond of all ages, the one shelter for all families of mankind, to whom must be ascribed all honour and glory.—Amen.” . . . Of the three great lights of Positivism, Comte, Congreve, and Harrison, three persons and no God, the latter has lately been engaged in a fierce paper war with

Herbert Spencer in which the systems of both have fared badly. Spencer, the Agnostic, feels no reverence for Humanity. On the whole, mankind, he says, are a bad lot. And the creed which gives us an Ideal Humanity, formed of the whole human race, erects a *falsehood* to be believed in—sets up the non-existent to be worshipped. “Then,” replies Harrison, “bring out from your philosophy a God worthy to be worshipped.” To which Spencer rejoins:—“What I set forth is the scientific fact. I find behind all phenomena a Mystery, to which it is difficult to give even a name. *It is*; nothing is more certain than its existence; it is the Ultimate Reality, the Infinite Energy from which all things proceed. But *what* it is no man knoweth.” “This is not Religion,” says Mr. Harrison. “Religion is belief, worship, conduct. Your scientific belief in a sort of a something, inspires no worship, and can have no effect upon conduct. It suggests no consolation to the bereaved, offers no light to the perplexed, creates no hope, inspires no affection.” And Mr. Cotter Morison, in his melancholy book, *The Service of Man*, acknowledges that “a belief in the Unknowable kindles no enthusiasm.” Surely if these men realised their own utter failure they would turn to the Christian and say:—“Give us of your oil, for our lamps have gone out.” What is good in their systems for the improvement of man they would find in Christianity, which adds besides the supreme motive, that the service of man is at the same time the best service of God.

May I venture to summarise, by way of conclusion, the results to which we appear to have come. The religious idea is natural to man. It is founded upon his primitive instincts, which he shares in common with other living things—such as the idea of causation, and the desire to propitiate, to gain over to his side, every power that can help him or harm him; also his ideals of happiness and perfec-

tion. And these natural instincts, ever operating, have led mankind in all ages to seek after the Unseen Maker and Ruler of all, if haply they might find him, though he be not far from any one of us. For in Him we live and move and have our being.

ENGLISH: LITERARY AND VERNACULAR.

BY REV. S. FLETCHER WILLIAMS.

ONE of the greatest philologists of modern times* has said of our English tongue that it possesses “a veritable power of expression such as perhaps never stood at the command of any other language of man.” He attributes its “highly spiritual genius” and “wonderfully happy development” to its having been formed by the intimate union of the two noblest languages in modern Europe—the Teutonic and the Romanic,—the former supplying the ground-work, the latter the spiritual conceptions; and, conceding to it the merit of being a world-language, he predicts for it a sway still more extensive than it has yet exercised in every part of the globe.

A happy result this, so far as it has gone, of the struggle which has been maintained for ages in the English mind, and therefore in the English tongue, between these two great elements—the homely vigour of the north, and the refined idealism of the south. They met first not only as strangers, but as enemies, in the persons of the Saxon and Norman races, on the field of Hastings. The Norman conquered and took possession. Its language was forthwith installed in all the high places of the land: in the monarch’s palace; in the baron’s castle; in the halls of justice; in the records of state; even in the boys’ grammar schools, where whoever was deemed fit to learn Latin was expected to construe it in Norman French. The rough, familiar Saxon, dear to the conquered people, was maintained among them as a means of their common intercourse, probably with less

* Grimm, *Ueber den Ursprung der Sprache*, s. 50.

and less attention to grammatical accuracy; and thus the two proceeded, side by side, but sullen and apart, to fulfil their respective vocations.

In process of time, however, the Saxon, applying himself to the gainful arts of industry, rose to wealth and consideration. As he attained to a community of ideas with the lords of the soil, he gradually assimilated his speech to theirs; and not more certainly did he become acquainted with their superior culture, their elegant arts, and their refined pleasures, than he adopted words from their vocabulary to polish and enrich his own. The Norman, on the other hand, becoming more and more precluded from intercourse with France, came to feel that England was his permanent home. The gradual equalisation of civil condition and privilege led to the fusion of the races once so antagonistic; and, finally, the wars of the thirteenth and fourteenth centuries, between England and France, inspiring the nobility with a chivalrous hatred of everything French, disposed them to adopt and cultivate the improving language of the English. The reign of Edward III, which witnessed the victories of Cressy and Poitiers, marks also the period in which the English language gained the day in its struggle for ascendancy over Norman French in this country. The following, from Robert of Gloucester, exemplifies the transition state:—

And the Normans ne couthe speke the bote her own speche
 And speke French as dude atom, and here chyl dren dude also teche.
 So that hey men of this lond, that of her blod come,
 Holdeth alle thueke speche that hii of hem nome.
 Vor bote a man couthe French, me tolth of hym wel lute,
 Ac lowe men holdeth to Englyss, and to her kunde speche ghute.
 Ich wene ther ne be man in world contreyes none,
 That ne holdeth to her kunde speech, bote Engclond one.
 Ac wel me wot vor to coune bothe wel yt ys,
 For the more that a man con, the more worth he ys.

This belongs to the following century:—

In Englis tonge I shal ghow telle,
 Ghyf ghe so long with me wyl dwelle ;
 Ne Latin wil y speke ne waste,
 Bot Englisch that men uses maste,
 For that ys ghoure kynde langago,
 That ghe hafe here most of usage :
 That can ech man untherstonde
 That is born in Englonde ;
 For that langage ys most schewed,
 Als wel move leveth as lewed.
 Latyn also y trowe can nane,
 Bot tho that hath hit of schole tane ;
 Som can Frensch and no Latyne,
 That useth has court and duellt therinne,
 And som can of Latyn aparty,
 That can Frensch ful febylly ;
 And som untherstondith Englisch,
 That nother can Latyn ne Frensch.
 Bot lorde and lewde, old and ghong,
 Alle untherstondith Englisch tonge.
 Therfore y holde hit most siker thanne
 To schewe the langage that ech man can ;
 And for lewethe man namely,
 That can no more of clergy,
 Tho ken tham whare most nede,
 For clerkes can both se and rede
 In divers bokes of Holy Writt,
 How they schul lyve, yf thay loke hit :
 Tharfore y wylle me holly halde
 To that langage that Englisch ys calde.*

After the middle of the fourteenth century, the practice of construing Latin only through French was generally discontinued by the teachers of youth. In 1362 a statute was passed, by which it was decreed that all pleadings in courts of justice should be conducted in English; and

* *MS. Bodl.*, 48, f. 48.

that the public records should be kept in the native language. About the same time, numerous translations of Norman tales and romances appeared; and after English had sustained the genius of Chaucer, no one could maintain that it was not fit for a gentleman to speak, or a poet to sing.

In the transformation which had passed on the language, which now emerged from its long obscurity, the influx of French words is the thing least remarkable. A much more important fact is, that almost all the inflexions of the Anglo-Saxon language, its declensions, moods, and tense formations, had appeared. It seems to be the tendency of all languages to diminish rather than increase their grammatical forms as they advance towards perfection; but the process seems to have been stimulated in English by the difficulty of adapting the Saxon forms of grammar to the French roots. The tacit arrangement seems to have been that the new comers should not bring their own grammatical forms with them, but neither should they be subject to the Saxon ones. The liberty thus granted to the foreign words extended through time to the native ones; and now there is not a language of modern Europe so free from grammatical inflexion as our own. This is the secret of its greatness, for there is nothing which it cannot adopt and assimilate on principles so simple. There are a few familiar Saxon nouns, such as *goose*, *geese*, *child*, *children*, that have persisted in retaining their old plurals; a few adjectives that are still compared with *er* and *est*; and a goodly number of verbs which, like *write*, *wrote*, *written*, keep the old past tense and participle; but we receive and naturalise any noun by merely giving it an *s* in the plural; we make a verb of anything, and put it through every mood and tense, without other change than the addition of *s*, *ing*, or *ed*. This is the sum total of all the grammatical inflexion that any word, not

being of the old Saxon stock, is obliged to submit to. We exhibit almost endless shapes of mood and tense by auxiliaries, which apply to all verbs alike ; we display the relations of case by prepositions which suit all nouns alike ; and we satisfy the exigencies of comparison by *more* and *most*, placed before every adjective of foreign extraction.

Such are the principles on which our language has proceeded to gather spoil from almost every nation under heaven. But to return.

The English language, having obtained a fair start towards the end of the fourteenth century, had completely superseded the Norman ere the close of the fifteenth. True, it was not deemed a fit vehicle for science, but neither was its aristocratic rival, or any other of the modern languages of Europe, whether Romanic or Teutonic. The most advanced of them were used for no higher literature than popular verse and short tales in prose, while cultivated thought and serious argument were embodied only in Latin. A new sphere of usefulness, however, was opened to the English language with the first dawnings of the Reformation ; and it entered the lists with a superior rival for the occupancy of that sphere. Those who sought to deliver the people from Romanism believed that it was to be done by committing the Scriptures to the language “understood by the people” ; by causing the vernacular in which every man talked with his fellow to be also the language in which he spoke to his God, and believed he heard his God speak to him. The use of the Latin as the language of worship and instruction had been the great instrument by which a corrupt priesthood had held itself in the position of a necessary medium ; and to abolish this was the first care of the earliest Reformers. Wycliffe did not ask whether the English language had acquired grammatical fixity enough, and copiousness, and precision, and dignity to be the vehicle

of Divine revelation, but he used it as he found it, and our vernacular had the honour of being the first of modern languages that embodied a whole Bible. That Wycliffe's version was calculated to be thoroughly popular, that it was down to the ordinary level of the vulgar tongue of his day, may be gathered from the complaint of one of his enemies. "Christ delivered His Gospel," says Knyghton, "to the clergy and doctors of the Church, that they might administer to the laity, and to weaker persons, according to the states of the times and the wants of men. But this Master John Wycliffe translated it out of Latin into English, and thus laid it out more open to the laity and to women who could read, than it had formerly been to the most learned of the clergy, even to those who had the best understanding." By this extreme condescension to the mind of the masses it was felt that the dignity of religious truth had been compromised, as well as the privileges of the priesthood invaded. "That which was before precious, both to clergy and laity, is rendered as it were the common jest of both. The jewel of the Church is turned into the sport of the people."

The English had now to compete with the Latin tongue for dominion in the provinces of religion and science, and this struggle also it had to maintain for ages; but it triumphed, as before, by gradually adopting the vocabulary of the superior language, and increasing the precision of its own, till it came to pass that no subject was so deep, or high, or subtle, but it could be treated in our language as adequately as in any other.

It is not given us to trace the successive steps of this development with any degree of precision. During the ages which it occupied, there was no standard of language by which progress could be marked. No academy of *littérateurs* ascertained its rules, determined its boundaries, watched against innovations, and decided on the admission or rejection

tion of every word that offered itself to public attention. Every author did that which was right in his own eyes ; and every book was, in a philological point of view, an experiment as to what would prove an acceptable addition to the native tongue. Probably almost every writer used terms unknown before, or employed old ones in a new sense. Succeeding generations either adopted or rejected each innovation, not, as it would seem, according to any acknowledged rules of criticism, but guided by those instincts which, if trusted, seldom lead astray. Though we have no means of ascertaining, except incidentally in a few cases, at what date each novelty appeared, or what author introduced it to our literature, it is possible to mark some great stages of progress, and a few general results.

For about a hundred years after Chaucer and Wycliffe, there was a rush for Latin transplants. Numbers of these were badly chosen, and afterwards perished, in company with *facundious*, *tenebrous*, *satatious*, *pulchritude*, *consuetude*, *spelunc*, *jument*, *irreligiosity*, which may be considered as fair specimens from Lydgate, Hawes, and other versifiers of the fifteenth century. But a great many took root, and flourish to this day.

Another very important, but of course very gradual, work of the same age, was to settle the respective functions of Norman-French and Anglo-Saxon words, which originally were synonyms and rivals. For instance, to *receiue* was the French word for to *take*, and Wycliffe uses them quite indifferently. Hence : —

Rom. v, 17 : “for if in the gilt of oon, deeth regned thoruz oon : myche more men that *takyng*e plenty of grace and of zeuyng and of riztfulnesse schulen regne in liif bi oon ihesus crist.”

Rom. xiv, 1-3 : “But *take* ze a sike man in bileue, not in demengis of thouztis, (2) for another man byueth that he mai ete alle thingis, but he that is sike : ete wortis, (3) he that eteth, dispise not hym that

etith not, and he that etith not deme not hym that etith, for god hath *take* hym to hym."

1 Cor. xv, 3: "for I bitook to zou at the bigynnyng that thing which also I have *resceyued* that crist was deed for our synnes, bi the scriptures."

2 Cor. vii, 2: "*take* ze us, we han hert no man, we han apeired no man, we han begilid no man."

In like manner, Wycliffe recognised the word *honour*, for he uses it; yet he employs worship, clearness, glory, honour, with very little distinction:—

John xii, 26: "if ony man serue me, sue he me, and where I am, there my mynystre schal be, if ony man serue me: my fadir schal *worschip* him."

John v, 23: "that alle men *onoure* the sone: as thei onoure the fadir, he that onoureth not the sone: onourith not the fadir that sente hym."

John v, 41: "I take not *clerenesse* of men."

John v, 44: "how moun ze bileue that resceyuen *gloire* eche of other, and ze seken not the glorie that is of god alone?"

John viii, 49: "ihesus answerid and seide, I haue not a deuél, but I *honour* my fadir: and ze hau vnhonourid me."

John viii, 54: "ihesus answerid, if I glorifie mysilf: my glorie is nouzt, my fadir is that glorifieth me: whom ze seien that he is zoure god."

These terms and many more had their respective functions determined before Tyndale's Bible appeared in 1534.

The next great start for new words was when the revival of ancient learning, which reached this country about the time of Henry VIII, rendered the masterpieces of antiquity comparatively familiar, and suggested necessities in our vocabulary never felt before, with the means of supplying them at hand. We learn from Pattenham that *method*, *methodical*, *function*, *politician*, *conduct*, *idiom*, *signification*, *numerous*, *penetrate*, *penetrable*, *indignity*, *savage*, *figurative*, *obscure*, *scientific*, *delineation*, *impression*, *dimension*, were

quite recent when he wrote, which was in the reign of Queen Elizabeth. Another writer somewhat earlier expresses his disapproval of *despicable, destruction, homicide, obsequious, ponderous, portentous, prodigious*, as “ink-horn terms smelling too much of the Latin.” About the same time a translator of Pliny’s *Natural History* deemed it needful to insert *acrimony, austere, bulb, consolidate, debility, dose, ingredient, opiate, propitious, symptom*, with a number more equally familiar to us, in a Glossary of “words of art,” as he calls them, adding a careful explanation to each.

The rage for new words seems to have continued and even increased till after the middle of the seventeenth century; for we find Dr. Heylin saying, in 1658, “many think that they can never speak elegantly or write significantly except they do it in a language of their own devising; as if they were ashamed of their mother-tongue, and thought it not sufficiently curious to express their fancies. By means whereof more French and Latin words have gained ground upon us since the middle of Queen Elizabeth’s reign than were admitted by our ancestors not only since the Norman, but since the Roman, Conquest.”

Meanwhile, the powers and influences evoked by the Reformation of religion, very shortly after the revival of classical learning, had supplied a counter operation, unfolding the popular side of the language, and developing the latent powers of the Saxon. The hope and strength of the Reformers lay in the Teutonic element of the national character. They appealed to the strong homely sense of the masses in the way of popular preaching and discussion; and in doing this were obliged to improve the resources of the vulgar tongue, and make it go as far as possible in explaining and enforcing religious truth. A single example may suffice to illustrate this. Our earlier divines were at a loss for a word to express that undue love of self which leads men to

sacrifice the interest of others to their own. Some had tried *philauty*, from *φίλος* and *αὐτός*, but it had not met with acceptance. Others had resorted to the Latin, and characterised the sin in question as *suism*, while they called the sinner a *suist*, many years before *suicide* was coined. But neither had this succeeded. Some Puritan writer, however, invented *selfish* and *selfishness*, which found favour immediately, and which even those on the other side in controversy did not disdain to use, though marking its origin as from the "new mint" of the Reformation.

Whether it was that the Restoration supplied a check to the needless multiplication of strange words by introducing us, through French literature, to rules of criticism and literary art, making us, as it were, a province of the great republic of European letters, instead of an independent and somewhat anomalous kingdom; or whether it was that the impulses which we have described had worked themselves out, and there succeeded a reaction of native instinct against what was unsuitable to the genius of the English language; certain it is that a host of vocables disappeared from and after the end of the seventeenth century, though they had borne the credentials of such illustrious authors as Shakespeare, Milton, Hooker, Fuller, Baxter, Drayton, Barrow, Jeremy Taylor, Beaumont, Hacket, and Bishop Hall. The following are some of the words alluded to, each found in one or more of the above authors:—*torve*, *tetric*, *cecity*, *immanity*, *insulse*, *insulsity*, *splendidious*, *pervicacy*, *lepid*, *sufflamine*, *immorigerous*, *clancular*, *ferrity*, *ustulation*, *stultiloquy*, *pau-ciloquy*, *multiloquy*, *lipothymy*, *hyperaspist*, *immarcescible*, *exility*, *spinosity*, *incolumity*, *solertiousness*, *lucripetous*, *inopious*, *eluctate*, with hundreds more at least as strange and unpleasing to our ears.

The French tastes which were brought to England through the return of Charles II and his courtiers from exile

gave us a number of new words ; and probably to this period may be referred that pretty large class of French terms which we easily recognise as not belonging to the Old Norman, and yet not so recent as to be still printed in italics, and indulged with their native pronunciation. Such words are *repartee*, *embarrass*, *chagrin*, *grimace*, which we infer from Dryden's plays were novel and affected in his time. A stranger proceeding was, that we began to pick up a number of terms that had long gone out of use. A Glossary, published in A.D. 1667, explains a long list of "old and obscure words in Chaucer," and we are surprised to find among them *anthem*, *chaplet*, *carol*, *deluge*, *franchise*, *illusion*, *problem*, *sphere*, *transcend*, with many others no longer obsolete, and which must therefore have been restored to our literature since that date. In another list of "obsolete words," published in A.D. 1671, there are found *phantom*, *glare*, *masquerade*, *oriental*, *plumage*, and such like.

In the earlier ages, orthography and pronunciation were very unsettled. As they gradually became fixed, two or more words were often created by the different spelling or accentuation of one. *Gentle* and *genteél*, *custom* and *costûme*, *human* and *humâne*, are examples of mere difference of accent resulting in different words with a distinct meaning to each. So with abbreviation : as *spirit*, *sprite* ; *courtesy*, *curtsey* ; *ordinance*, *ordnance* ; *history*, *story*. Sometimes the difference depends on an internal vowel, which once would have been of no consequence ; as *float*, *fleet* ; *sweep*, *swoop* ; *snake*, *sneak* ; *neat*, *nett* ; *mister*, *master*. Often it depends on initial consonants once interchangeable : as *phial*, *vial* ; *thrice*, *trice* ; *chattel*, *cattle*. Or on a slight difference in the final consonant : as *poke*, *poach* ; *dyke*, *ditch* ; *clod*, *clot* ; *wake*, *watch*. Besides a difference in spelling only : as *draught*, *draft* ; *plain*, *plane* ; *check*, *cheque*. Archbishop Trench enumerates above two hundred terms added to our

vocabulary by these modes of splitting words which were originally the same in meaning, though liable to slight variations of form.

New words thus multiplied in the course of ages, as they were found needful either to embody ideas altogether new, or to express old ones with more precision or greater brevity. At the same time a great many ancient ones, besides the tentative words already alluded to, gradually perished from the way: good old Saxon words worthy to have lived. Is not *wanhope* a beautiful term for *despair*? And would not *afterthink* save half the explanations of many a sermon on *repentance*? These and thousands more of greater or less merit are now to be found only in the provincial dialects, and have come to be regarded as mere vulgarisms.

During the present century the progress of science has necessitated a multitude of new terms, chiefly from the Greek; but with respect to words not strictly technical, there has been considerable jealousy of fresh importation. Unless a really new thing, as a photograph, or telegram, or telephone, or phonograph appears, we look shyly at a word altogether novel. When Mr. Grote's *History of Greece* came out, it was severely criticised for embodying such terms as *hegemony*, *hoplite*, and about a dozen more hitherto unknown to our literature; unjustly reprehended, as I think, because the kind of headship which was conceded to one Greek state by the rest could not be precisely expressed by any other word than *hegemony*; nor could the panoplied citizen warrior whom he calls a *hoplite*, and to whom Greece owed its liberty and fame, have been otherwise distinguished from various other classes of fighting men in the same age: and so of the rest. The terms are strictly technical: they belong to no other subject, and therefore cannot properly be deemed innovations in the general literary language. On the other hand, the cultivation of precise thought, and the

study of intellectual, social, and political economy have led within a recent period to the formation of a large number of vocables from others previously in use. Let a man of sixty or seventy years of age glance over the pages of a first-class newspaper, and he will find in this sense a large number that he never saw or heard when he was a youth—unconscious as he may be of the fact till his attention is excited towards it. There is no change, perhaps, of which we are as little sensible as this ; because if a word appears obviously a legitimately formed one, useful to give effect to some shade of meaning, and withal perfectly intelligible, we scarcely challenge it as new ; everyone, unless he is very sure of his philological knowledge, takes it for granted that it existed before, though he never observed it. For instance : *educational* was deemed a dubious, if not offensive, novelty about fifty years ago ; but since it has held its ground, any writer adds *al* to any word in *tion*, and no one objects. So we have *inflexional*, *emotional*, *denominational*, *international*, and a host of others that Samuel Johnson never dreamed of. In like manner *ism* is freely and unobservedly employed to form new nouns from previous adjectives, and *ate* to make verbs—hence *socialism*, *differentiate*. In fact, the only required condition appears to be, that the formation be made in a manner sanctioned by usage, and from a word already well established.

While this practice is tending much to the precision of disquisitions on abstract subjects, there is, nevertheless, on the whole, a growing regard for the Teutonic side of the language ; a disposition in our most popular writers and speakers to prefer a Saxon word to a Latin or Greek one of similar meaning, as well as to revive the English idioms, eschewing stately periods and classically formed sentences. It is almost certain that Shakespeare, Spenser, and even Chaucer, are more intelligible to us than they were to the

contemporaries of Dryden ; our general literature resembles theirs much more than did that which prevailed one hundred and eighty or two hundred years ago.

Such are a few of the salient points in the history of our literary English. The changes it has undergone and is undergoing prove that the vital formative energy has been continually at work and is even yet in full vigour. "A living language," says Dr. Trench, "is one that is in the course of actual evolution ; which is appropriating and assimilating to itself all it anywhere finds congenial to its own life, multiplying its resources, increasing its wealth ; which at the same time is casting off useless and cumbersome forms, dismissing from its vocabulary words for which it finds no use, rejecting from itself by a reactive energy the foreign and heterogeneous which may for a while have been forced upon it. I would not assert that in the process of all this it does not make mistakes ; in the desire to simplify it may let go distinctions which were not useless, and which it would have been better to retain ; its acquisitions are not all gains ; it sometimes rejects words as worthless, or suffers words to die out which were most worthy to have lived. So far as it does this, its life is not perfectly healthy ; there are here signs, however remote, of decay and death approaching ; but still it lives, and even these misgrowths and malformations, these errors, are themselves the utterances and evidences of life." *

This is true chiefly of the life of a literary language ; it is continually moving on in one direction or other, sometimes in the way of healthy progress, sometimes in vicious paths which lead to deterioration ; its course being altered here or accelerated there by the fortune of political events, or the leadings of individual genius. Meanwhile, the true vulgar tongue, the *patois* of the uneducated, is transmitted

* *English, Past and Present.* 5th ed., p. 41, 42.

from generation to generation with comparatively little change. There are even to-day secluded valleys in England where most of the inhabitants now in occupation are the descendants of those who lived on the same spot in the days of Chaucer, and who, whether they have read English books or not, speak among themselves the lingo which they learned from their mothers, and repeat traditional tales which have been handed down from age to age in the same phraseology.

It is from a recognition of this truth that during the present century there has been among our most eminent philologists an earnest relenting towards the provincial dialects of England. It is agreed that they embody old, rather than bad, English; that they have not in the main corrupted the language so much as they have preserved its ancient remains. It is believed that in districts where the peasantry have been for ages devoted to husbandry, where they have enjoyed few facilities for intercourse with strangers, and have been tempted with few inducements to change their locality, there are to be found remnants of the Anglo-Saxon tongue in its least altered condition. Among those who most highly prize our literary English, there is a misgiving that our present polished phrase and fashionable pronunciation are in many cases false and corrupt innovations; and that the peasantry who disdain our refinements, and cleave with tenacious affection to their strong and expressive dialects, have been the true conservators of the purity of the ancient language. Philologists are now turning to these vulgar tongues as the storehouse in which are laid up many of the treasures which the literary English has cast away; and though there may be no serious desire of restoring them to their former functions, there is an anxiety to preserve them as antique curiosities, not only interesting in themselves, but serving to illustrate and explain much that is otherwise difficult in the matter and history of our

literary English. "Probably," says Mr. Forby, "no one dialect has issued from the Anglo-Saxon fountain in a full and uncontaminated stream; but in every province some streamlets flow down from the fountain head, retaining their original purity and flavour, though not now relished by fastidious palates. None can boast that they retain the whole language unimpaired, but all may prove that they possess strong traces of it." *

The varieties which are found in these dialects are probably coeval with the first establishment of the Teutones in Britain, and depend on differences which even then existed between the several sections of Jutes, Angles, Saxons, that successively obtained a settlement in the country.

It would be extremely difficult, if not impossible, now to determine for each provincialism the bounds of its habitation, or to trace its origin in the history of those who employ it; but doubtless much more might be done than has yet been attempted in the way of settling the relations of each to the parent stock, either as true derivatives or mere corruptions. I do not presume to enter on this field of enquiry; but merely to glance in a very cursory way over the most striking features of our local dialects.

The section of immigrants called in our histories West Saxons were those which obtained the ascendancy over the whole country about the beginning of the ninth century; and though there is no reason to believe that their dialect was generally used beyond the district where they originally settled, yet it was doubtless that which was cultivated by Alfred the Great, and those other writers before the Conquest, from whom we have remains. It formed, in short, the basis of the literary Anglo-Saxon. It is for this reason that so much interest attaches to the dialect of Somersetshire and the adjacent counties, which, with all its

* *Vocabulary of East Anglia.* By the late Robert Forby. 1830.

uncouthness, is said to approach more nearly to the literary Anglo-Saxon than any other existing dialect in England. The leading peculiarities here are—the *a* is pronounced long as in *father*; the *e* like *a* in *pane*; *th* is sounded like *d*, so that *through* is pronounced *droo*. There is a tendency to invert the order of some of the consonants: thus—*thrush*, *brush*, *rush*, are pronounced *dirsh*, *birsh*, *hirsh*; and *clasp*, *hasp*, *asp*, are sounded *claps*, *haps*, *aps*. One syllable is often made two; as, *boath*, for both.* The soft sound of *z* is used for *s*, and *v* for *f*.

Mr. Jennings,† who is the chief conservator of this dialect, has collected and explained about one hundred and fifty Somerset words not found in our modern literary English. A considerable number of them, however, occur in Chaucer and other old writers. He gives the following dialogue as a specimen:—

“FARMER—‘Jan! why dwon’t ye right my shoes?’

JAN.—‘Bin, maester, ’tíz zaw cawld, I can’t work wi’ tha tacker at âll; I’ve a brawk it ten times, I’m shower ta dâ—da vreeze za hord. Why, Hester hanged out a kittle-smock ta drowy, an in drie minits a war a vraur as stiff as a pawker; an I can’t avoord ta keep a good vier—I wish I cood—I’d zoon right your shoes an withers too—I’d zoon yarn zum money, I warnt ye. Can’t ye vine zum work vor me, maester, theaze hord times? I’ll do any thing ta sar a penny. I can drash—I can cleave brans—I can make spars—I can thatchy—I can shear ditch, an I can gripy too, bit da vreeze za hord. I can winny—I can messy or milky nif ther be need o’t. I ood’n mine dreavin plough or any theng’”

Somersetshire may be considered, in point of language, as the centre of a district including at least Devon, Cornwall, Dorset, Wilts, Hants, and Gloucestershire. The above

* See Mr. T. Spencer Baynes’s *Somersetshire Dialect: Its Pronunciation*: e.g., Bee-ust = beast; Clee-an = clean; Mee-olk = Milk; Nee-ad = need; Shee-ape = sheep; Zee-ade = seed.

† *Observations on Some of the Dialects of the West of England*. By James Jennings. 1825.

specimen is from the eastern part of Somersetshire, the dialect of which graduates into that of Gloucester and Wilts, while west of the Parret river it displays some peculiarities in common with Devon and Cornwall. One of these is the uniform use of *th* in the verb, corresponding to the usage in our Authorised Version of the Bible—he *loveth*, not he loves. Here, as elsewhere, the pronouns are what, in a grammatical point of view, diverge most from our usage. *Ise* or *er* is used instead of *I*; *er* for *he*; *her* for *she*; the nominative and objective cases being interchangeable. “*Har’th a doo’d it* ;” for “*she has done it.*” “*A zed a’d do it*”—“*I said I would do it.*” *I* is *yes*. Throughout the whole of the district the present tense of the Saxon verb “*to ben*” is regularly preserved; *I be*, *thou beest* or *bist*, *we be*, etc.; *I war*, etc.

The following notice, said to have been stuck up at the Market House of Taunton, exemplifies the dialect west of the Parret :—

“*Lost, a hempty zack we anuther zack in un ; a guse ; a wet-stun ; and a pekie ov taters, Eny boddy vinding the zame and oll bring un to Varmer Dusson at the Nag’s Hid, shall ha dree shilling gied to un, and a heeep o’ drink.*”

The counties of Berks, Surrey, Sussex and Kent, are poor in dialectic characteristics, obviously from their proximity to the metropolis; and a similar condition throughout the Midland counties is explained, if, as Mr. Latham judges, the language of our standard authors originated from the Mercian or Midland English,* rather than from the literary Anglo-Saxon; which, as we have seen, approximates most to the dialects of the south-west. Mr. Latham considers Huntingdonshire as the centre of the Mercian dialect, and gives the following as a specimen :—

* *Handbook of the English Language*. 9th ed., p. 147.

Our Polly is a sad sloot, nor heeds what we hev taught her ;
 I wonder any man on eerth should ivver rare a daughter ;
 For she mun hev both hoods, and gowns, and hoops, to swell her pride,
 And scarves, and stays, and gloovs, and laece, and she'll hev men
 beside ;
 And when she's drest with carr and cost, so temptin, foyne, and gay,
 As men should sarve a coveumber, she flings hersen away.

Passing from the Midland to the Eastern counties, we find a very peculiar dialect, most strongly marked, in Norfolk and Suffolk, somewhat less so in Essex, Cambridge, and Lincoln. We are much indebted to Mr. Forby for his description of it, to which he has added a vocabulary of 1,900 East Anglian words, not previously recorded either in Mr. Grose's Collection of 2,500 for all England * or Mr. Pegge's *Supplement* of 1,000 to Mr. Grose. †

Not content with describing the East Anglian peculiarities, Mr. Forby assiduously, and as it appears to me successfully, finds a parallel for almost every peculiarity in some of the oldest English authors. He maintains that it is an absurdity to imagine that the vulgar fabricate language for their own ordinary use, and asserts, concerning every vernacular tongue, that "its forms, be they as many and as various as they may, are all in substance remnants and derivatives of the language of past ages, which were at some time or other in common use ; though in long process of time they have become only locally used and understood."

The general and pervading characteristic of the East Anglian is narrowness and tenuity of enunciation, often accompanied with a shrill whining recitative. For this narrowness, he cites as precedents *wex* for *wax* in Spenser ; *hes*, *hest*, *heve*, for *has*, *hast*, and *have*, in Percy's *Ballads* ; *ketch* and *shet* in Chaucer, for *catch* and *shut*. Consonantal

* *Provincial Glossary*. By F. Grose, Esq., B.A.

† *Supplement to Grose's Provincial Glossary*

peculiarities are *f* for *v*, while *v* and *w* are commutable ; the *w* being used for *v* by the rustics, and *v* for *w* by those whose diction has been polished by town breeding. The *g* is always hard after *n*, so that they say *bring-ging-g-in*, *fling-ging-g-out*. *R* is invariably added between the vowels to prevent hiatus :—"Set the vinder open ;" "lawr and justice ;" "Annar is not at home." Some final syllables are uttered in a careless, slurring manner :—*Eshup*, *muckup*, *wuddus*, for ash-heap, muck-heap, wood-house. Some terminations, however, are accented and drawn out :—*Expensivé*, *lamentáble*, *certainlie*, *possibúl*. Words are run together in a way most puzzling to a stranger :—*Tut*, *dut*, *wat*, *het*, *tebbin*, for to it, do it, with it, have it, it has been. So also *cup*, *gup*, *gout*, *gin*, *giz*, for come up, go up, go out, go in, give us. This abbreviation can be practised on a larger scale. A girl employed to keep cows called herself a *galcobaw* (girl-cow-boy). The East Anglians use *weak* where we have strong preterites, always saying *selled*, *telled*, *teached*, etc., for sold, told, etc. On the other hand, they have retained some of the old, strong preterites, as *rise*, *riz* ; *sit*, *sot* ; *give*, *guv* ; *bring*, *brung*.

In striking contrast with the dialects of the south and east, is the broad, sonorous, mouth-filling northern, which in England has many sub-divisions. Its extreme is found in Northumberland, Cumberland, and Westmoreland, where it differs very little from Lowland Scotch, which is admitted on all hands to be a Saxon dialect, and to have been cultivated by popular poets as early as the southern English. Its departures in pronunciation from standard English consist chiefly in broad vowel sounds. In such words as *man* the *a* is as long as we pronounce it in *father* ; the *e* in *men*, as ours in *these* ; the *o* in *rock*, like that in *rose* ; while contrariwise, a *rose* is a *rause* ; the short *i* is either *ee*, as *peen* for *pin*, or it sounds *u*, as *wuth* for *with*. The sound

of *oo* is much like the French *a* ; and *ow* is like *oo*. On the other hand, there is no confusion or interchange, as in almost every other part of Britain, between the sounds of *f* and *v* ; of *z* and *s* ; of *h* aspirate and *h* mute. *R* is always trilled or burred where it occurs, but it is never introduced gratuitously at the end of a word. And, in opposition to the south and east, the *g* after *n* never receives a hard sound ; it is lost in present principles, thinkin', for thinking ; and is a mere nasal in such words as *single*, pronounced *sing-l*, not *sing-gle*. So *gh* has always that Teutonic guttural sound which seems to have been utterly lost among all our southern dialects. The North British is a vast treasury of old Saxon words, long lost to our literary language. The poems of Burns and the novels of Sir Walter Scott brought the Scotch section of it into a degree of notice which has been enjoyed by no other dialect. The similarity of that of Cumberland can be judged from the following :—

WATTY.

“If ye ax whar I cum frae, I say the Fell-seyde,
 Whar fadder an mudder an honest fwok beyde ;
 An my sweetheart, O bless her ! she thowt nin like me,
 For whun we shuik hans, the tears gushed frae her e'e :
 Siz I, ‘I mun e'en git a spot if I can,
 But whatever betyde me I'll think o' te, Nan !’

“Nan was a parfet beauty, wi' twee cheeks like codlin blossims ;
 t'varra seet on 'er meade my mooth aw watter. ‘Farrs-tee-weel,
 Watty !’ siz she ; ‘too's a wag amang t'lasses, an I'll see te nae mair.’
 ‘Nay, dunnet gowl. Nan !’ siz I.”

* * * * *

“At Carl I stuid wi' a strea i' my mooth,
 An they tuik me, nae doot, for a promisin yooth.

“T'weyves cam roon me in clusters : ‘What weage dus te ax,
 canny lad ?’ sez yen.—‘Wey, three pun an a croon ; wunnet beate a
 hair o' my beard.’ ‘What can te dui ?’ sez anudder.—‘Dui ! I can

prow, sow, mow, sheer, thresh, deyke, milk, kurn, muk a byre, sing a sam, men cargear, dance a whornpeype, nick a naig's tail, hunt a brok, or feight ivver a yen o' my weight in aw Croglin parish.'"

There are, however, numerous divisions and sub-divisions of the northern dialect. That of South Lancashire has become well known through "Tim Bobbin," which, however, is a caricature; that of North and North-East Lancashire, through Edwin Waugh, Ben Brierley, and "Ab o' th' Yate." Here is a notice said to be a genuine specimen from the North Riding of Yorkshire :—

"This is te gie noatice, Jamz Pickersgill yats his yune te morn t'morn, te morn t'nean, an te morn t'neet an ne'er langer, se lang as storm hoads, coz he caen't get eldin.'

That is :—

'This is to give notice, James Pickersgill heats his oven to-morrow at morn, to-morrow at noon, and to-morrow at night, and not longer, so long as the bad weather lasts, because he can't get fuel.'

Staffordshire is likewise reckoned a branch of the Northern.

CONVERSATION BETWEEN A STAFFORDSHIRE CANAL BOATMAN AND HIS WIFE.

'WOMAN.—'Dun yo know Solden mouth Summy?'

MAN.—'Eees: an' a 'neation good feller he is tew.'

WOMAN.—'A desput quioiet mon! but he loves a sup o' drink. Dau yo know his woif?'

MAN.—'Know her, ay, Hoo's the very devil when hoo's spirit 's up.'

WOMAN.—'Hoo is. Hoo uses that mon shameful; hoo rags him every neet of hoo's loif.'

MAN.—'Hoo does. Oive known her come into the public and call him all the names hoo could lay her tongue tew afore all the còmpany. Hoo oughts to stay till hoo's got him i' the boat, and then hoo mit say wha her'd a moind. But hoo taks aiter hoo's feyther.'

WOMAN.—‘ Hew was hoo’s feyther ?’

MAN.—‘ Whoy, singing Jemmy.’

WOMAN.—‘ Oi don’t think as how oi ever know’d singing Jemmy. Was he ode Soaker’s brother ?’

MAN.—‘ Eees, he was. He lived a-top o’ Hell Bouk. He was the wickedest, swearnist mon as ever I know’d. I should think as how he was the wickedest mon i’ the wold, and they say he had the rheumatiz so bad.’”

Between Robert Burns and other poets for Scotland, Mr. Collier, Mr. Forby, Mr. Jennings, and the publications of the English Dialect Society, we have probably a pretty fair representation of the leading dialects which have descended in the vulgar line from the Anglo-Saxon stock. Not being all on the same subject, however, but, on the contrary, exhibiting almost as great a diversity of thought as of expression, they afford but imperfect means of comparison. But an illustrious foreigner, Prince Lucien Bonaparte, has travelled the length and breadth of the land, has inquired personally into the peculiarities of each representative district, and has procured in each a version of the same theme. He has been in Somersetshire, where the lingua which we reckon the most uncouth is deemed, as we have said, the nearest approach to the ancient literary Anglo-Saxon ; he has been in Edinburgh, to obtain the standard lowland Scotch ; he has been in the most northern of the Shetland Isles, where the Scandinavian element has been more abundant than in any other part of Her Majesty’s dominions. He has obtained a translation of the “ Song of Solomon ” in each of the leading dialects, and of the “ Parable of the Sower ” in the subordinate ones. I am at a loss to account for this choice of themes, which, at first sight, does not seem particularly happy ; because the Oriental turn of thought and imagery in the Canticles cannot easily be familiarised so as to appear at home in the Anglo-Saxon dialects ; and the

"Parable of the Sower" includes very few of those words in which vernacular peculiarities appear most strongly. The reason of this selection probably is that there are some very ancient Anglo-Saxon, English, and other versions of the Canticles; and there has been a large collection made of translations of the "Sower" in the Teutonic and Scandinavian dialects of the Continent, both ancient and modern. Hence I conclude that the object chiefly in view is a comparison of our existing dialects with those of former ages and existing languages.*

Mr. Pegge devotes his services to vindicate the dialects in general, as he found them brought together among the lower classes of the metropolis, including, of course, the true Cockney, of which he says the most striking and offensive error in pronunciation lies in the transpositional use of the letters *w* and *v*. But his chief anxiety is to clear the grammar of the vulgar from the imputation of being a departure from good English, by showing that it is the educated classes who have departed from the ancient usages. He characteristically entitles his introduction: "An Address in behalf of some old unfortunate and discarded Words and Expressions turned out of the World at large by Persons of Education, and acknowledged only by the humble Orders of Mankind, who seem charitably to respect them as decayed Gentlefolks who have known better Days."

The double negatives, which we deem to be each other's destruction, he shows to have been a peculiarity of our language seven hundred years ago; witness a proclamation of Henry V: "Be it known as Sir John Oldecastle refuse nor will not receive nor sue to have none of the Graces," etc. Double negatives are common in Chaucer, frequent in Shakespeare, and in various authors between these. Double

* Mr. Latham gives the Buonapartean versions of the Canticle in the Northumbrian dialects south of the Tweed. *Handbook*, 9th ed., pp. 136-142.

comparisons, as *worser*, *lesser*, are found in Spenser, Shakespeare, Dryden, and Addison; *most highest*, *most straitest*, in our Bibles and Prayer Books; *most boldest*, *most unkindest*, in Shakespeare.

A countryman *axes* pardon. This form of *ask* is found from Chaucer till the middle of the sixteenth century. In Anglo-Saxon, the verb *learn* meant both to learn and to teach; the vulgar use it so still, and have a precedent in the fourth and fifth verses of the twenty-fifth Psalm (A. V.) Chaucer uses it thus, and so does Shakespeare: "You must not learn me to remember." The words *ourn*, *yourn*, *hisn*, are Saxon pronouns corresponding with *mine* and *thine*; but the *n* of the genitive, like that of the plural, was softened into *s* as the Anglo-Saxon merged into the English. The *-en* which terminates the plural of verbs, especially in the past tense, not, indeed, in the Anglo-Saxon, but in the English from Chaucer's time to Spenser's, is still found in Derbyshire and other counties bordering on the northern. At a vestry meeting, in Derbyshire, a churchwarden asks, "What sayen you to this affair?" Answer: "Why, we tellen them that we thinken otherwise; and that they talken nonsense." These peculiarities might be pursued much further, but the above may suffice.

It has not been without an important practical object that I have thus invited attention to the progressive tendency of our literary language, and the stationary character of the vulgar tongues. It must be obvious, even from this extremely cursory glance, that our literary English, enriched with French, Latin, Greek, and other words, and formed into complicated sentences by rules of grammatical construction, is, notwithstanding the advance of education, an unknown tongue to the masses, especially in some districts. It is probably at least as unintelligible to them as the Latin of literature was to their ancestors in the Middle Ages. When

it is remembered that at one time the two great Universities each included about thirty thousand students, using Latin for their daily colloquial intercourse as well as in all their studies ; and when we have added to these all the priests, monks, and others already educated ; there must have been in proportion to the population a greater number of persons acquainted with Latin, such as it was, than there are now capable of using literary English. It is not merely the peasantry of rural districts that are thus ignorant. In spite of our elementary schools, the lower middle classes of our large towns are deplorably so, and many of higher position too ; but because they can express themselves tolerably in speaking or writing on the business of their every-day life, which requires no extensive vocabulary or complicated paragraphs, it is taken for granted that they understand all that can possibly be said to them in the language which we call English.

Our fathers did not make bricks without straw. When at the era of the Reformation the Homilies were set forth by authority, to be read in the churches, it is recorded that a great number, both of the clergy and the laity, could not understand them ; “and therefore sometimes, when they were read in church, there would be such talking and babbling that nothing could be heard.” It was not expected in those days that people would sit mute, and reverently listen to what they could not comprehend. But now it was felt necessary to raise them to a higher level ; and with this view, Grammar Schools were established in various parts of the country, to take up the work of education as soon as reading in the mother tongue had been acquired. The title reveals the intention,—Grammar, not Latin, schools. The object, doubtless, was not chiefly to make the pupils acquainted with Latin as such, but with language ; and with Latin only because the structure of language and the higher

materials of our own could be known through no other medium. Knowledge could in no other way be made accessible to the people, because it was embodied either in Latin or a Latinized English, quite distinct from the vulgar tongue, there being probably even very few religious books written in such plain language as the English Bible. As time rolled on, the Grammar Schools, through changing circumstances which need not be detailed, ceased to answer their original design. They became mere Latin schools, less and less intimately associated with the great end of opening the treasures of knowledge to the people. Their endowments came in many cases to be used for the maintenance of teachers of the higher classes of society; and Acts of Parliament were obtained for teaching the sciences, with writing, drawing, and modern languages, in these institutions which were originally founded for the purpose of familiarising literary language among the people. The subordination, if not the abolition, of this their function, has no doubt done much to produce a general impression that a thorough training in language is not necessary as preparatory to science. But it is one question whether schools should insist upon the children of the people learning the Latin and Greek classics; and quite another whether it is desirable that there should be cheap Grammar Schools, or a Grammar side in our elementary schools, in the sense which properly attaches to the term: that is, schools or sides devoted to the teaching of literary language, by which means alone the masses of the people can attain to an understanding of the books which contain our treasures of science, whether physical, moral, or social.

The masses in Scotland are confessedly superior to the English in general intelligence, and particularly in the power of comprehending what I may, for variety, call "book-learning." In the Scotch parochial system every school-

master is appointed to teach English and Latin ; and in the larger towns, till of late years, when English notions have become prevalent, the routine of education was uniformly this. All the children, except the very poor, were sent first to the reading or English school maintained by the town ; and here they learned nothing but to read the mother-tongue with a broader or finer pronunciation, according to the polish of the master, but generally somewhat at least above the colloquial usage. Having attained to this, the boys whose parents could afford it were transferred to the town grammar school, called the High School, where nothing but Greek and Latin were taught for four hours a day. The girls were at the same time sent to sewing schools, which were not maintained in perfect silence, but were enlivened by general conversation, story-telling, or light-reading ; chiefly the last. Books of knowledge would not have been listened to in a sewing school : nothing but an interesting narrative could command attention. The girls, who at this stage of life were learning no kind of lessons, were thus obtaining a practical acquaintance with general language, while the boys were gaining a theoretical one. The principle might not be adverted to, but the fact was there. Writing and arithmetic were learned at another school for an hour or two daily, contemporaneously with Latin and sewing ; but such matters as geography, history, English composition, or physical science, were never thought of till after this second period ; then the wealthier studied them at more advanced seminaries, or the poorer as they took bursaries, scholarships, at colleges and the universities ; while the rest were left to pick them up as they could from books that might fall in their way.

At the present day, the prevailing opinion is, that as soon as child or man can read at all, he may and ought to derive substantive knowledge through the medium of books :

and it is considered one of the great triumphs of modern methods of education that geography, history, and natural science are taught to the youngest children. As far as this can be done in words which they understand it is well. But it is sheer cruelty to oblige a peasant child to learn these things in the usual language of text-books.

I have made myself acquainted with a great number of the lesson books which now teem from the press, and I am compelled to say that many of them, the majority of those I know, are compiled with apparently little reference to the question whether they can be apprehended, and with little knowledge of the calibre of mind that has generally to apprehend them. Some of them might almost as well be in Latin, so far as their power of conveying ideas is concerned. This may not be experienced in large towns, where the human mind is quick ; but it is the case generally throughout the country. The result of using such books is that the children contract a habit, not easily broken in after life, of reading and repeating as a purely mechanical process, without attaching, or attempting to attach, a single idea to the words. It may, indeed, be doubted whether half of all the children in our elementary schools know that they ought to attach ideas to the words of books. In many cases they put letters together to make words, and words to make sentences, just as they cast up columns of units, tens, and hundreds, without dreaming of any obligation to settle in their minds whether these numbers represent apples or oranges, men or horses. Hence such scenes as the following may at almost any time be witnessed. A girl of thirteen is directed to "say her geography" to a visitor. After she has with great fluency repeated the boundaries of several countries, the visitor asks, "What is a boundary?" Anxious to acquit herself, she thinks a moment, and replies, "The wages for the year." The word "boundary" could suggest nothing to

her mind except the terms on which the workmen in that part of the country are usually *bound* to their respective employers for a twelvemonth. A class has read a lesson, of which the subject is Greenland. Visitor enquires if anyone knows what the whales are which are mentioned in this lesson. After a considerable pause, an earnest-looking boy cries out, "What goes on ca-arts!" Taking it as an isolated term the child is right. "Whales" (*Anglicè*, wheels) are what go on carts in Dorsetshire. If the natives knew anything of the cetaceous monsters of the deep, they would call them *whauls*, as in the north, or something else that would not be confounded with cart-wheels.

In another school, a very smart little boy stands up and reads from the New Testament, Matthew ix, 1, "And he entered into a ship, and passed over, and came into his own city." Visitor asks, "What did he enter into?" "Don't know, thank you, sir," replies the boy politely. "Read it again. Now, what did he come into?" "Don't know, thank you, sir." How should the child know? Not one of the three predicates, *entered*, *passed*, *came*, belong to his vernacular. If he had seen the transaction, he would have narrated it by means of *gaed* and *coomed*. Probably not more than half of the elementary schools in England, certainly in rural England, would be found to display greater intelligence than in these examples.

Of course, the teacher explains the words of the lesson. But such teaching is often as though one put a Latin geography into a child's hand, and made him understand it, so that he was acquiring Latin and geography at the same time, but each, of course, less perfectly than if it had been the sole object of study for the time being. The meaning of terms peculiar to any subject may and ought to be learned when the subject is entered upon; but if the general lan-

guage of the lesson in hand is not previously understood, there can be little progress.

It would be a great point gained if those who have the superintendence of popular education were fully alive to the necessity of teaching language as a matter apart from communicating other knowledge. There may be a difference of opinion about the mode. Some respectable authorities still discourage the system of initiating the children of the masses in Latin roots, and the formation of various words from them. On the other hand, the repetition of definitions or synonyms may become merely an exercise of memory without judgment. The humblest, however, may be trained in a partial way, as deaf-mutes are—made to put the same word into various sentences till its use is familiar, and to turn sentences upside down in the way of question and answer, till the mutual relations of the words are felt, though they cannot be technically described. It is to be regretted that, while there is a superabundance of books and cards progressive as to the art of reading mechanically, there seem to be none framed with the express view of introducing the pupil gradually and systematically to an acquaintance with the language of books. It might thus be readily acquired in childhood by mere usage, but it is otherwise in maturer years. If it is not learned in early youth it will probably never be learned at all; at least, it will never become a familiar and agreeable medium.

It is quite Utopian to imagine that the general spread of education will ever abolish the vulgar dialects, or to hope that if the present race of children were taught book-language it would not be necessary to teach the next generation the same thing. I could point to districts in England, to say nothing of Scotland, where education has been so long and so efficiently maintained, that the adult population, with scarcely an exception, understand any ordinary English book;

but where they still use the local dialect as their every-day medium, and it would be considered the height of affectation to do otherwise. Consequently, each generation of children finds the language of books for a time strange, though with the advantage of interpreters at hand. "Mither kent t' way an' gaid t' meenen" (mother knew the way and gave the meaning), said a well-educated boy in answer to a question about his own early difficulties in this respect. Montaigne, who was born during that rage for ancient classics which followed the Renaissance, tells us that when he was an infant his father engaged, not a nurse-maid, but an eminent scholar to carry him about and talk Latin to him, so that, as soon as he spoke at all, he used the language of Cicero, and knew no more of French than of Chinese. It is recorded also that Oberlin thought to get the low *patois* of Steinthal suppressed by establishing an infant school in which not one word of it was permitted. Such processes, however, can never be carried on effectively on an extensive scale. We must accept it as a fact that every child learns its mother-tongue, and that this is seldom the English of literature. It is not so even as far as it goes, to say nothing of its deficiencies.

To what cause may be attributed the success which has always been deemed to attend Scotch education? In part, to the fact that the better classes in Scotland all understand the lingua of the people, and use it in their intercourse with them, without feeling it to be the slightest compromise of their own dignity. A Scottish parish schoolmaster employs an English text-book, just as, eighty years ago, Ruddiman's Grammar was committed to memory and repeated in Latin; but whenever he begins familiar explanation or extemporary teaching of any kind, he speaks as broad Scotch as is necessary for being understood. So does the minister in conversation with his parishioners, the landlord with his

tenants, counsel with his witness, the lady with her domestics, and every one with the poor whom he undertakes to befriend, always, with true delicacy, avoiding the use of any broader style than that used by the inferior party. Till within the last seventy or eighty years it was not unusual for parish ministers in rural districts to preach their whole sermons in lowland Scotch; that is, using not merely the broad pronunciation, which is still usually done, but the dialectic phraseology of the common people, and not because their hearers could not understand better language, but because the familiar dialect came home more closely to the heart. I have heard of a minister who some years ago was preaching to the Sunday-school children of a large town, and waxing earnest exclaimed, "Children, will none of you *gang* to heaven?" The children thought he had done preaching, and had descended to colloquy, whereupon one, and another, and another replied, "I'll gang!" and presently the church was in an uproar with eager volunteers, each anxious to make himself heard, while the preacher stood confounded at the effect of his own condescending eloquence. I have heard, too, of a good Rector in Dorsetshire, who described the conduct of Zaccheus by telling his rustic congregation that "er climmit up a tree to see un," but probably this is a rare instance in England. Much more usual is it to darken, in an attempt to dignify, the Scriptural narrative by Latinized vocables, as did the curate who, not long ago, preaching on the same passage, said that "Zacchæus ascended the branches of a sycamore to escape from external pressure."

It is a principle inherent in human nature, that nothing tends so much to alienation of feeling as difference of language; nothing comes home to the affections like the mother tongue; and in no way can a rich man so acceptably lessen the distance between himself and a poor one as by addressing him in his own dialect. With all his intended

kindness and condescension he seems proud if he talks fine.

I have sometimes thought that a labour of love would be the circulation of select portions of the Scriptures, such as short narratives, or parables from the Gospels, in provincial dialects, among, say, Norfolk farmers, or Durham colliers, or Dorsetshire graziers, without compromising the dignity of the Bible. I commend the suggestion to those whom it may concern. Only, of course, there should be no caricaturing of the dialect, no extreme that would render the Scriptures contemptible to the natives themselves. The style adopted should be that of the well-doing and intelligent lower middle class, which in any case would well bear comparison with the version of Wycliffe, which, uncouth and homely as it is, no one dares to despise. Did not the Bible Society, about sixty years ago, print a Negro-English Testament; a mixture of English, Dutch, and African, modified to the genius of Negro-slavedom, the leading characteristic of which is excessive childishness? Witness the beginning of John ii—

“Drie deh na bakka dem holi wan bruiloft na Cana na Galilea: en mamma va Jesus ben de dapeh. Ma dem ben kali Jesus manga hem disciple toe va kom na da bruiloft. En teh wieni kaba mamma va Jesus takki na hem; dem no habi wieni morro. Jesus takki na hem: mi mamma hoeworko mi habi nanga joe? Tem va mi no ben kom jette.”

That is to say:—

“Three days after back, them hold one marriage in Cana in Galilee, and mamma of Jesus been there. But them been call Jesus with him disciple too, for come to that marriage. And when wine end, mamma of Jesus talk to him: them no have wine more. Jesus talk to him: my mamma, how work me have with you? Time of me no been come yet.”

Our home dialects are nothing like this. They are homely remains of the old Saxon, making up in vigour much of what

they want in polish, and including nothing which can appear contemptible to the truly enlightened.

It might do ourselves good to improve our acquaintance with these dialects. The English we so highly value derives its strength from the Teutonic element; its variety and polish from the classic and romantic. Ever since we parted company with the German family, above a thousand years ago, we have scarcely ever deigned to replenish our vocabulary from that quarter; but continuing to draw from the south, we have been every now and then in danger of crowding our language with useless puerilities; of introducing so many foreigners that, as Dryden expresses it, they seemed as if intended not to assist but to conquer the natives. The best preservative against this tendency for the future is to maintain our acquaintance with the remains of the indigenous race still living obscurely among us; and if, now and then, we can raise a sturdy native from the degradation of ages, instead of enlisting a more elegant and effeminate foreigner, we shall do good service to the language which we proudly call our English.



THE ARABIAN NIGHTS.

By ROBERT FREDERICK GREEN.

THE second Abbaside caliph, Al Mansur, who in the year 754 held his court at Bassowrah, would seem to have been a man considerably in advance of his age. In the first place, he contented himself (no small virtue in those days) with a policy of something like passive resistance; did not as did his predecessor and successor, apply himself to fomenting the fierce faction quarrels of his sect, but seemed disposed to let them die, if they would, a natural death, and to employ himself and his people in more useful and profitable work. He had, of course, the usual family feuds. An uncle and a nephew, both with a hankering after the throne, made themselves eminently disagreeable in the early part of his reign; but, after disposing of these worthies, he applied himself to the mental culture of his people and the improvement of his country. That he was successful in both, history leaves no room for doubt. He founded Bagdad, and made it the seat of his empire. He invited to his court students and men of science whose fame reached him, and he ordered translations to be made for his schools of such works as *Aristotle* and *Euclid*. Now at this time there was in existence a Persian collection of tales known as *Hazar Afsaneh* (thousand nights), said to have been written for—or by, we shall never know which—one Queen Humia, and which, from being exceedingly popular in Persia, had become known in Arabia and the adjacent countries. A translation of it into Arabic was made by order of the Caliph Al Mansur, and from this translation the history of the *Arabian Nights* may be

traced without any uncertainty whatever. Of the original Persian collection very little is known positively. It is mentioned by Mahommed ben Ishak, an Arabic bibliographer, who flourished at the close of the tenth century, and who states that he saw it complete several times. He gives the argument as follows :—

A certain king having killed an unfaithful wife, was wont to marry every day, and kill his bride next morning. Presently he wedded a damsel of the daughters of the kings; one gifted with great intellect, and named Scherazad, and when she was with him she began to tell him fanciful tales, breaking off in the morning at an interesting part of the story, and thus inducing the king to spare her life until he had heard the end. In this way she went on for a thousand nights. when, having borne her husband a son and heir, she confessed the device she had practised.

This evidence is of course conclusive as connecting the Persian work with our present collection. The former does not now exist; has never, in fact, been known in western Europe. It seems to have been a collection of fables, so mixed up with the folk-lore of their country and showing so many suspicious resemblances to the fables and folk-lore of other neighbouring countries, that the supposition of a single author is impossible, and we must look upon the work more as an embodiment of ancient myths or legends than as a distinct literary effort.

Once clothed in an Arab dress, the Persian tales were not long in losing the more prominent traces of their nationality. They became the property of the professional story tellers; were current in the bazaars and coffee-houses; were adapted, improved, and localised to suit their hearers, and according to the skill of their narrators. In process of time new tales were invented, became popular, and took their place in the collection; the old animal stories gave place as years went on, to fairy tales, which allowed more scope for

the teller's fancy, and which satisfied the popular craving after the supernatural. These again made way for historical romances, such as those of which the great Caliph Haroun Al Raschid is the hero, and where we have the Wezeer Jaafer and the Queen Zubaydah introduced to give reality to the picture. But though some of the tales were put into writing, there does not seem to have been any attempt made at a complete collection. Such a thing was hardly necessary; the stories had so adapted themselves to their Arab home that they had become a part, as it were, of Arab life. There was little need to collect what everybody knew, and an ignorance of *The Nights* would have been as remarkable as ignorance of the language. The tales simply grew and changed with the people who heard them—very slowly indeed. Left behind as a useless luxury when Islam began its aggressive march westward; isolated by the decadence and extinction of kindred literature in neighbouring countries, they remained with the race who had adopted them, an eddy in the tide of civilisation.

Ben Ishak, in his slighting reference to the Persian work (he calls it “a corrupted version of silly tales”) tells us that it was a favourite with the Emperor Alexander of Macedon, who not only was amused by its tales, but who set great store by its precepts and inculcations. He did not, however, have any translation made of it into his own language, still less did he take the trouble to make it known abroad, and from his time until the end of the seventeenth century—a period of over six hundred years—a few Turks were the only readers of *The Nights* in Europe.

In 1670, however, a young Frenchman, Antoine Galland, who had already made himself conspicuous in Paris by his oriental studies, was appointed *attaché* to the French embassy at Constantinople. His special mission was a theological one. He was to study the dogmas and doctrines of the holy

orthodox (the Greek) church, then the subject of some attention among the more advanced Roman Catholics, but he found time also to fraternise with the Moslem folk, to frequent the cafés, and to learn their language thoroughly. After some four years in Constantinople, his chief, M. Nointel, started on a journey to the Levant and the Holy Land, taking Galland with him. Here, of course, *The Nights* were common property, everybody knew them, everybody believed them implicitly, and nearly everyone was satisfied to find in them a complete national literature. Galland himself was so much impressed that he then and there determined to translate them into his own language. The work, which he set about at once, was by no means easy or straightforward. In the first place no edition of the tales was to be had in Syria. Galland had to go about collecting, in the streets, in the bazaars and cafés, and had to write down what he heard. He never did get, and never could have got, anything like a complete series of the tales in this way, but he got some,—Alladin and Alibaba, for instance,—of the best that have yet come to light, and some of which no written copy is known to exist. He returned to Paris in 1676, but subsequently made two journeys to the East, each time adding materially to his collection of the tales, and to his knowledge of the people.

His work was published at Caen, in 1704, and at Paris a little later, under the title *Mille et une Nuits; Contes Arabes traduits en Francois*, and at once became famous as "*The Arabian Nights Entertainments*."

"Abridged," says Burton) "to one-fourth, mutilated, fragmentary and paraphrastic though the tales were, the glamour of imagination, the marvel of the miracles, and the gorgeousness and magnificence of the scenery at once secured an exceptional success. It was a revelation in romance, and the public recognised that it stood in the presence of a monumental literary work. France was afire with delight at a

something so new, so unconventional, so entirely without purpose—religious, moral, or philosophical. The oriental wanderer in his stately robes was a startling surprise to the easy-going and utterly corrupt Europe of the ancient *régime*, with its indecently tight garments and perfectly loose morals.”

As a translation, Galland’s work has undoubtedly many and serious defects. It is first of all woefully incomplete, giving only about fifty of the two hundred and two tales now known. The argument, the slender thread of which is our only excuse for not treating the volume merely as a collection; is wrongly told, and is obviously finished according to the translator’s own fancy; and the style is an awkward attempt to Gallicise eastern idiom. But these shortcomings are such as affect the reader very little. Galland knows his stories, there is no doubt about that; and he can tell them well. It is he alone, all later translators admit, who is to be thanked for their popularity in western Europe, and in the face of this success fault-finding is hypercritical. The work was published originally in twelve volumes, and ran quickly through four editions. All Paris read it, waiting eagerly for each new volume, and Galland suddenly found himself in the, for him, unusual and awkward position of a literary hero.

One very good story (I translate it from Michaud’s *Universal Biography*), is told against him at this time :—

In the first two volumes he prefaced each tale with the following formula :—“ My dear sister, if you are not sleepy, tell me one of those tales you know.” Now some young men, becoming tired of this monotonous introduction, went one very cold night to the author’s house, and energetically knocked at the door. Galland, awakened by the noise, appeared at the window in his nightshirt, and his visitors, after plying him with various frivolous questions until he was thoroughly starved, suddenly called out, “ Oh ! Mr. Galland, if you are not sleepy, tell us one of those beautiful stories you know ! ” Galland

went back to bed, and profiting by the lesson, suppressed in future volumes the preamble which had called forth the joke."

The French work quickly found its way into this country, where it became almost as popular as in France. Burton relates an anecdote, which seems to be well founded, of the Lord Advocate for Scotland, Sir James Stewart—"a very grave gentleman." He found his daughters, one Saturday evening, reading the new book. He severely rebuked them for spending the eve of the Sabbath in such a worldly occupation, and he confiscated the volumes. They found him in his study next morning; he had taken a glance at the wicked work, and had sat up all night reading it.

The early translations of Galland's work were by no means satisfactory. They were improved in later editions,—one being published in Liverpool, in 1813,—and in their various guises constituted the only English version for more than a hundred years. Then the subject was again taken up by oriental scholars. A Mr. Torrens, a lawyer of Bengal, began a translation of the celebrated Calcutta Arabic edition. This promised to be fairly complete, but, unfortunately, nearly every copy of the first impression was lost at sea, and the work was abandoned after the publication of the first volume. The next year, in 1840, Lane's work appeared, and took, and has kept, its place as the best popular translation we have. It is nothing like complete, being simply a rendering of the celebrated Cairo MS., but the tales it gives are thoroughly representative, and they are told with a force and *verve* that must impress the most callous reader. Mr. Lane was well known as the most eminent oriental scholar of his day, and his notes show a knowledge of Arab folk and custom which is simply marvellous. Burton speaks somewhat contemptuously of "his Anglicised Latin, his sesquipedalian English words, and his stiff and stilted style,"

but this is, after all, a matter of taste, and to me Lane's style suits his subject perfectly. The grave iteration of Arab speech comes to us less strangely in the language of Johnson than it does in Burton's modern English, and, if Lane's characters are pompous, they are never like Burton's, who are frequently vulgar, and who talk slang.

The next English translator was John Payne, who, in 1882, produced, for the Villon Society, a most elaborate and complete work. Besides the classic manuscripts, he collected a large number of tales current in Egypt and Syria, and accepted generally as belonging to *The Nights*, and his translation of them is so accurate that even Burton, who is not given to praising liberally, admits it unimprovable. The Villon Society printed only five hundred copies of Payne's work, so that it is in the hands of members, and is practically unprocurable.

The latest translation, and we are not likely to have another, is that by Sir Richard Francis Burton, in sixteen volumes, of which the publication is only recently completed. This work, by far the most complete in existence in any language, may be said to have exhausted the subject. Its value as a translation may be gauged from the fact that it is the work of one who adds to a literary genius a more perfect knowledge of Arab life, and of Arab dialects, than probably any native of that country; who, in the performance of duty, in pursuit of knowledge, or out of sheer curiosity, has been in every city, palace, church, café, and brothel in the Arab speaking East; who has avowed his utter disregard of conventionalities, both in conduct and language, and who has set about his task with the determination to let nothing whatever stand in the way of a complete performance of it. Of the sixteen volumes, *The Nights* proper—the canonical works—occupy ten, the remainder being devoted to Arab tales, of which the connection with *The Nights*, though

probable, is not certain. Only one thousand copies of Burton's work were printed, but an expurgated edition, with a few phrases altered, and a few notes omitted, has since been issued by his wife, and, if less useful to students, is much pleasanter reading.

I have spoken of Burton's work as being the most complete in existence, and this leads me to say a word about the vagueness and uncertainty which have always surrounded the tales, not only as regards their number, but as to their style and arrangement. There is no such thing as a complete edition. There cannot be. The tales are constantly altering; old ones have been forgotten; new ones—the story of Ala al din and the magic couch for example—have been imported and become naturalized; and those that come down from the earliest times have been so much altered by local story-tellers as to be sometimes hardly recognizable.

The Arabic editions, of which some half-dozen are famous, are notoriously incomplete. That of Calcutta would have contained the most tales, but it was never completed. It was edited by Sir William H. Macnaghten from a Cairo manuscript. Lane says he translated from the same original, though Burton suspects him of having got hold of the less esteemed Bulaq manuscript. At Breslau, the text was published of a very voluminous manuscript found at Tunis, and a translation afterwards made into German. The work is, however, condemned by both Lane and Burton as hopelessly incorrect and misleading. Neither Payne nor Burton have followed any one Arabic edition, but (the latter especially) have collected many stories as Galland did, on the spot, from the professional story-tellers

As we now have them, *The Nights* consist of about two hundred main stories, and about one hundred minor or incidental tales. These are generally agreed upon as authentic,

but there have been collected at least another hundred, all having claims to be included. No single edition or manuscript gives, however, anything like this number, and everyone has tales which are not found elsewhere. Burton, after a most exhaustive enquiry into the origin of the modern collections, comes to the following conclusions :—

1. The framework of the book is purely Persian perfunctorily Arabized ; the archetype being the *Hazah Afsanah* (a book, by the way, of which no copy is known to exist).

2. The oldest tales, such as *Sindebad* and *King Jiliad*, may date from the reign of *Al Mansur* (eighth century, A.D.)

3. The nucleus of the collection (some thirteen tales, with incidental stories, which are common to all known editions, and which include the tale of the three apples, the ebony horse, &c.), may be placed in the tenth century.

4. The most modern tales, those bearing internal evidence of their late appearance, such as *Maaruf the Cobbler*, are as late as the sixteenth century.

5. The work assumed its present form in the thirteenth century.

6. The author is unknown for the best reason—there never was one.

The tales are strung together without order—late histories, early fables, and mediæval fairy tales—the wish of the first collectors evidently being to give as much variety in style and subject as possible. The only ties that bind them together are *Scherazad's* opening phrase, and the obvious relationship of the characters.

This last is indeed an extraordinary and unique feature—no matter where the scene is laid, whether in Egypt or China, land or sea, up in the air or underneath the ground, the actors are Arabs, natives of Bagdad or Damascus, in the same picturesque dress, with the same formal speech, and showing the same predilections and antipathies. It is a

ridiculous anachronism no doubt, but it is just this that makes *The Nights* something more than a book of nursery tales, that brings them down from the region of fancy to the more solid ground of scientific enquiry, and renders them worthy of the most serious study. They are really a picture—true, because involuntary—of national life, and uncoloured by any national or religious prejudice. They are the unconscious autobiography of a race, and of a race which has never in the world's history been without its influence on art, commerce, and politics.

Reading them, then, with this certainty of their truth and candour, it becomes interesting to see what sort of men and women are portrayed, whether their actions and apparent motives are better or worse than ours are supposed to be now—whether human nature has changed much since the days of the great Caliph. We must remind ourselves to begin with, that the ideal morality of *The Nights*, like that of the *Koran*, is distinctly lower than that of our time and of our religion. It is the morality of revenge and reprisal rather than of good for evil—of just punishment rather than forgiveness. It recognises hate and anger as justifiable, and as sufficient excuse for many misdeeds, and looks upon opportunity as a permission to immorality. These are old ideas, as old no doubt as humanity itself, and who shall say they do not still obtain. *The Nights* show us nothing above an ordinary natural working day code of morals—making all sorts of allowance for circumstance, and such as anyone, despite a few lapses, may reasonably be expected to live up to. There are not wanting, however, indications of something higher and nobler. The merchant will not let his brothers be killed, though they have requited his kindness by trying to murder him: “Let them go,” he says to his wife, “they are still my brothers—Satan made the deed seem fair in their sight.” Then the envied not only forgives the

envier, but disarms his enmity at last by kindness and presents. It is true that the envied one could afford to be magnanimous, having escaped and profited by the danger his enemy had caused, but his generosity is none the less noticeable, and as it is applauded, we may feel sure that a higher morality was beginning to be recognised. The average character in *The Nights* does *not* forgive his enemies, and does not pretend to. "May Allah have no mercy upon him," says poor Sindabad, fervently, when he has battered the brains out of the little old man on the island.

Perhaps Nur al din's parting advice to his son may be quoted as fairly representing the average morality. As the old man is on his death-bed his counsel may be expected to be less tinged than usual with worldly-mindedness:—

"Be over intimate with none, for security lies in seclusion of thought."

"Deal harshly with none, lest fortune deal hardly with thee; for the fortune of this world is one day with, and another day against, thee, and all worldly goods are but a loan to be repaid."

"Learn to be silent; and let thine own faults distract thine attention from the faults of others: for it is said, In silence dwelleth safety."

"Beware of drunkenness, for wine is a fine solvent of human wits."

"Keep thy wealth and it will keep thee."

This is very good advice, but is essentially selfish. There is a noticeable absence of any reference to that duty to others which, at any rate in theory, becomes more prominent as men advance in civilisation. On the other hand, however, it is evident that if the ideal standard of morality be low, the practical one—the one which folk attain in their every day life—is high. The men of the tales invariably keep their promises, and trust others to do the same. The merchant who, throwing away the date stone, unknowingly kills the Ifreet's son, is about to be killed by the Ifreet in revenge.

He begs for a year to put his affairs in order, but returns at the proper time as he promised. Oaths are seldom taken. It never seems to enter into the head of the story-teller or his audience that a man can break his promise, and, except with the lowest classes, no precautions are taken to make him keep it. There is also a very high regard for family ties. A brother or sister will divide hard earned savings over and over again with a worthless or idle brother, knowing all the time that the money will be squandered. The appeal, "It is my brother," admitting of no denial. Then again, however a man may try to escape punishment for his misdeeds he will not let another suffer for them. Witness the story of the hunchback, where, one after another, the four people who have fallen across the body step forward and offer their own lives to save those whom they think innocent. That the people of *The Nights* are hospitable and charitable goes without saying; they have become a proverb for their kindness to strangers, and they willingly maintain armies of beggars, even when idleness and imposture are evident.

One great advantage *The Nights* possess, as a picture of human character, is that they never trouble us with motives. They tell us with most minute exactness what a man does, and with the greatest care what he says, but they never pretend to know what he thinks. Of course, the teller of the story, speaking in the first person, tells us his thoughts sometimes; this he is entitled to do since he knows them, but he lets the actions of everyone else speak for themselves. This I think shows a wisdom one could wish were possessed by later story-tellers. It must be an impertinence to suggest motives in others. They can only be inferred from actions, and if these are recorded properly, the reader is just as well able to draw conclusions from them as the writer, and is, moreover, in nine cases out of ten, less prejudiced. The

lessons in *The Nights* are clear enough, but the reader must find them out for himself; the moral of the story does not come in at the end, and is never printed in italics. As may be expected, the characters of men are drawn with much more completeness than those of women; the qualities of the latter, indeed, in so far as they do not affect their relationship with the opposite sex, are not thought worthy of the slightest notice. The men of *The Nights* are generally trustworthy, the women seldom are. Mr. Lane sums up the Arab estimate of women in the words of a learned Imam, Al Jarefee. This authority says—

“It is desirable for a man, before he enters upon any important undertaking, to consult ten intelligent persons among his particular friends. Or if he have not more than five such friends, let him consult each of them twice. Or if he have not more than one friend, he should consult him ten times at ten different visits. If he have no one to consult let him return to his wife and consult her, and whatever she adviseth him to do, let him do the contrary, so shall he proceed rightly in his affair and attain his object.”

Over and over again women are described as deceitful, as being able to assume a guise of love and virtue whilst plotting the greatest wickedness. Ugly old women seldom commit crimes, they are only stupid or mischief making. The wicked women are enchanting in feature and manner. In men, the face is an index to the character, in women it is a mask. “Go away, oh woman,” says the hermit when the angel visits him in his cave in the form of a beautiful woman, “thou art deceitful and perfidious. I want not thy company; he who coveteth the life to come, renounceth thee, for thou deceivest mankind, those of the past time and now. Thou devotest thyself to deceive others. Woe unto him who is cursed with thy company.” *The Nights* give us few good women, but they abound in stories of faithless wives, wicked enchantresses, jealous and cruel mistresses. Men are repre-

sented as their innocent victims, or falling an easy prey to their wiles. In fact the picture is altogether so one-sided that it is clear the story-tellers had experience only of one class, and that not by any means the best. Of course the men are not perfect; their virtues are made the most of, but there is no attempt to conceal their faults. If they will neglect their work and loaf about for days under a balcony, where they have seen a pair of bright eyes or a pretty face, it serves them right when they are enticed in and have a bad time of it with the lady's husband. If they will be curious,—as they generally are, despite the most elaborate cautions,—and meddle in affairs that do not concern them, they cannot expect much pity even when the loss of an eye or a couple of ears is the result. If they will entertain strange ladies,—and they always do when they have the chance,—they must expect difficulties with other members of the family. And if they will be jealous and suspicious of their wives for no earthly reason, they must expect to be deceived. One of their commonest weaknesses is talking of what they are going to do, or of what may be if certain things happen; and some of the best stories in *The Nights* are those which describe those aerial castles tumbling down about their ears. The story of the barber's fifth brother, Alnaschar, is one of these, and is well known throughout Europe, and there is another almost equally good, where the two brothers, not yet married, quarrel over the wedding portion of their children who are not yet born. For the rest the men are generally faithful and affectionate husbands, considerate and indulgent fathers, and good and true friends. When they do get into trouble a woman is at the bottom of it.

The style of *The Nights* is at worst fragmentary, and at best prolix, changing several times in the one tale from an hardly intelligible conciseness to the most wearisome discurs-

siveness and tautology. Both Lane and Burton incline to the opinion that when the tales were written it has not been with the view of preserving them as literary works, but rather as a guide or set of notes for the professional storyteller, who was supposed to fill in his tale to suit his audience and his fancy. In no other way can the useless digressions, the senseless allusions, and the gratuitous indecencies be explained. They were the points, worked in to please some local official, to suit some popular fancy, or simply to cause a laugh, and have nothing to do with the story proper.

On the other hand, the tales, like Arab speech, always abound in the most beautiful similes and aphorisms. Of the former, there are a certain stock set, and Burton has somewhat spoilt their beauty by making out a list. A beautiful face is always like the full moon—somewhat too expansive a comparison for our tastes; the hero is as brave as a lion, the enemy craftier than the fox, and the counsellor more cautious than a crow. The mistress has a forehead of pearl, eyes like an ox,—the old classic comparison,—eyelashes like sharp swords; her glance is as an arrow shot from the bow of her eyebrows, and she walks as a ship at sea. No less invariable, and even more complete, are the aphorisms. I cannot imagine a more beautiful expression than the Arab has for death:—"Admitted to the mercy of God." "God wrote safety in my fate," is the expression when one describes the success of a long journey or voyage; and "the world grew black to me" well signifies deep sorrow or rage. One grants a request with the formula "to hear is to comply," and refuses it with "Allah open thee another door." Not less expressive, if more comic, is the Reeve's saying—it will be remembered he was shut up in a clothes-chest to be carried into the harem—and describing his sudden fright, when the chamberlain came up and

demanded to see what the chest contained, he says : " I died in my skin."

The philosophy of *The Nights* is summed up in one word, fatalism—what is, was to be ! One cannot help admiring the faith which really does enable men to meet their troubles so calmly, to receive the severest affliction and the greatest triumph with such self-abnegation. There are plenty of philosophies, and religions too, for that matter, which preach patience and resignation, but I am afraid they do not all work out so well in real life. The national temperament has something to do with this ready acceptance of the inevitable, no doubt ; it may be apathy rather than resignation, but I do not think it is altogether. The second calender's tale is a case in point :—The king's daughter loses her life in the attempt to disenchant him ; her death nearly causes the death of her father, but he says very little to the innocent cause of all the trouble. " I have lost my daughter," he says, " who was worth more to me than a hundred men, but I blame thee not, since it was out of thy power to prevent the affliction. The decree of God has been fulfilled upon us and thee, and praise be to God that my daughter restored thee, though she destroyed herself. Now, however, depart from my city. It is enough that has happened on thy account, but as it was decreed against us and thee, depart in peace."

One other fact in connection with *The Nights* is the belief in them which exists to this day among the lower classes. The tales are listened to as true sober statements of fact ; the wildest flight of fancy, the speech of animals, the transformations and enchantments of the jinnee, are received by the Arab folk in sober earnest, and without the faintest question. Many travellers have remarked this, and it is perhaps one of the most significant proofs of the truth of the picture they present of Arab life. The audience

recognise themselves, their brothers and sisters, and their enemies, in the stories; the people act as they would act, possess their virtues, and have the vices of their neighbours, therefore, they must have lived, and the rest of their doings pass unquestioned. Burton himself tells us how—

“The Shaykhs and ‘white-beards’ of the tribe gravely take their places, sitting with outspread skirts like billocks on the plain, as the Arabs say, around the camp-fire, whilst I reward their hospitality and secure its continuance by reading or reciting a few pages of their favourite tales. The women and children stand motionless as silhouettes outside the ring; and all are breathless with attention; they seem to drink in the words with eyes and mouth as well as with ears. The most fantastic flights of fancy, the wildest improbabilities, the most impossible of impossibilities appear to them utterly natural, mere matters of everyday occurrence. They enter thoroughly into each phase of feeling touched upon by the author; they take a personal pride in the chivalrous nature and knightly prowess of Taj Al-Mulúk; they are touched with tenderness by the self-sacrificing love of Azízah; their mouths water as they hear of heaps of untold gold given away in largesse like clay; they chuckle with delight every time a Káze or a Fakír—a judge or a reverend—is scurvily entreated by some Pantagruelist of the Wilderness; and, despite their normal solemnity and impassibility, all roar with laughter, sometimes rolling upon the ground till the reader’s gravity is sorely tried, at the tales of the garrulous Barber and of Ali and the Kurdish Sharper.

And this after an existence of more than one thousand years! *The Nights* indeed show no sign of losing their popularity, they have gained a new audience in the west, and will hold that, no doubt, as they have so long held their original one. Committed to no purpose but that of amusing, obtruding no moral but such as is shown us in our own everyday life, they disarm all criticism, and leave the reader free to revel in their wondrously beautiful fancy.

How the scene shifts!—Now we are on the banks of the Tigris and see the fisherman throwing in his net and bringing up the bottle; now in the palace of the great Caliph, and among the crowd pressing into the council chamber;

now in a cave in the desert, listening to the lion's boasting, and wondering at the old man coming on so quietly with his load of timber—and all without effort or surprise. We are being carried along far above the common ground—are in the clouds, surrounded by that oriental mist which is diffusing such gorgeous colours over everything, and through which we can see the life beneath changed and beautified as it is in dreams; we can see the city transformed to the lake in the mountains, and its people to fishes, at the word of the wicked queen; we can hear the rustle of the jinneyah's wings as she flies past us with Hasan in her arms; we can understand the song of the birds and the mingled cries of the animals, and we wonder—if we wonder at all—that such things should ever have surprised us. This is how we read *The Nights*, and that it is the right way we may be sure—for it is the way the children read.

THE CRADLE OF THE ARYANS.

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WHEN, in the closing years of the last century, Sir W. Jones discovered to the Western world the secret of Sanskrit and taught them that in the far East, the accepted cradle of the human race, there existed a language of immemorial antiquity, the germs of which showed unmistakable identity with European speech at large, it seemed for a moment as though the primitive, perhaps the universal, language of mankind had been unearthed, and India was its home. Study, analysis, and reflection soon dispelled the dream; and the true character of the great Indo-European unity, which Schlegel was perhaps the first to apprehend, was established by the genius and industry of Bopp, who mapped out for all time the broad general demarcations which define the separate groups of closely correlated families of speech. Students of language have ever since that time been busily engaged in cross-questioning the evidence of language, and trying to extort thence the secret of the prehistoric movements, culture, and dwelling-places of Indo-European man.

The first crude hypothesis of an Indian origin was soon found untenable. It was exchanged for the theory, propounded by Pott, and brilliantly elaborated by Pictet, that the true home of the stock was to be found in the Bactrian plains of Central Asia; and this general theory, in forms variously modified, may be said to have held the field without serious dispute until quite recent years. The theory had much to commend it. It gave a compact and simple scheme to philologists, already wedded on the strength of historical

and biblical prepossessions to the assumption of an Eastern descent; it brought the Eranian and Indian stocks, whose languages seemed to stand closest to the parent speech, locally nearest to the cradle of the race; it assumed the continuous migration westward, which, while admitting simple and intelligible diagrammatical presentment, tallied agreeably with accredited beliefs; it could be brought without much violence to explain the seeming ratio of divergence shown by the derivative languages from the parent stock; and it conveniently located the primitive Aryan in districts inaccessible and unknown. It is still maintained in general outline by such veteran authorities as Fick, Hehn, Kiepert, and Max Müller, as well as by a crowd of lesser lights; but within the last ten years the new heresy that advocates a European origin has everywhere gained ground, and now threatens to chase its adversary from the field. The somewhat random guess first hazarded by Latham in 1854, can no longer be set aside as the fancy of a hare-brained Englishman of "the land of curiosities," or the adopted whim of a Göttingen Professor. One may smile at eccentricities or extravagances of argument in Geiger or Cuno, or at Pösche's strange preference for the Rokitno swamps traversed by the Dnieper, the Beresina, and the Pripet; but it is impossible to set aside such names as Benfey, Spiegel, Schrader, or in our own language, Whitney, Sayce, and Taylor. Members of this Society may welcome a clear account of the controversy as it now stands.

Of the results established by the earliest enquirers, none have proved more permanent than their conclusion regarding climatic environment. They disposed finally of the Indian supposition. The one defined season perpetuated in the vocabularies of all branches of Indo-European folk is *winter* (Sk. *himá*), and this, moreover, used in Eastern tongues

to designate time, a winter season, not merely winter-cold. With it range the companion stems that designate snow and ice, shared by Eranian with European tongues. India has, indeed, lost names which lay outside her experience in things, but still exhibits the snow (*snih*) stem in the meaning 'shine.' For 'spring' also (*ver*) there is a common term, but alike for 'summer' and for 'autumn' the stems that can claim to be Indo-European shew far more vagueness of definition, and in the Eastern group denote year or season in a general rather than specific sense. The fact that winter dominates the yearly reckoning, and firmly holds its place, even in torrid India, of necessity relegates the founders of Indo-European speech to some climate familiar with ice and snow, and winter's binding grip. To this condition Northern Europe and Central Asia conform with equal ease.

Vocabulary next claims critical examination.

The term for 'sea' deserves preliminary handling. There is no common name. One word is European, endorsed by Latin, Celtic, Slavonic, Lithuanian, and Teutonic stocks. The Eastern languages use different stems, and those distinct from one another, the Eranian *daraya* or *zaraya* only finding representation in India as denoting a flat plain. This may be mere accident; Greek has lost the word,* and turned to independent sources: and why not therefore Zend likewise and Sanskrit, just as no common term for 'river' is shared by East and West? Still the fact is striking. The sea is one of the phenomena likely to make a permanent impression on the mind, and win a name defying change or oblivion. And assuming some historic circumstance to underlie the divergence, what is the interpretation? The upholders of the Asiatic hypothesis set some store by the fact. The race, they say, was cradled

* But possibly preserved in Ἀμφιμαρος.

in the interior. One branch, moving southwards, first found the sea on coasts of Persia and of India, and there devised new names for the new wonder; and so likewise the westward migration for itself, on gaining Europe and the sea. But the fact that *all* the European brotherhood (the Greeks excepted) share the same word, implies that the term was framed in common, not independently therefore on European shores, and the further inference is drawn that it was the Caspian Sea that supplied the new experience and the new name. The argument savours of perilous precision, and the unanimity of the European races in conservation of the term, as they pursued their distant inland routes, tempts to semi-credulous surprise. The alternative interpretation, say on Penka's reading, teaches that the word is an heirloom of the stock, first taught on Baltic shores; that it survived in all the European tongues, but that, in the long pilgrimage and sojourn in the East, it was lost to the Eranian vocabulary, and a new term borrowed or devised by the Indians, and the first explorers of the Persian coast. In such a statement there is little forced or unnatural, though some small balance of plausibility rests with the former view. One solid inference remains, viz., that the language was not framed *in the interior of Europe*. The word must derive from some joint home upon some sea-board, whether of Europe, or peradventure of the Caspian or Aral seas.

The same may be said, though less forcibly, of the discrepancies in terms for fish. Teutonic, Celtic, Latin are at one; Sanskrit and Zend diverge in company. But here the argument is feeble, inasmuch as rivers breed fish equally with the sea. Oriental diet, or nomad pastoral life on the wide plains of Asia, may well have proved fatal to the word.

The names of *fauna* and *flora* next invite consideration. The subject has been thrashed almost *ad nauseam* without carrying conviction to disputants on either side, yet I cannot

hold with Schrader that it is doomed to sterility. It is true that with the disappearance of an animal or tree the name assigned to it drops spontaneously out of the vernacular, and that there is little likelihood of a common name surviving the removal of all occasion for its use; and the recognition of this fact will relieve us from much fruitless and prolonged discussion. But nevertheless the consideration of the vocabulary in this respect may yield general inferences of no small value, which it will be the object of this section to deduce.

To begin with quadrupeds. The domestic animals give no results of value. The dog, the cow, the sheep, the pig, the goat and the horse all bear Indo-European names, and were known therefore, and all probably domesticated, prior to the separation of tongues. Whether the species originated, or whether they were first domesticated, in Asia or in Europe, has no bearing on the present question.

Wild animals deserve closer attention. The *lion* opens a difficult controversy. The main facts are unquestioned—that no common term connects the Asiatic and the European groups; that Indian and Eranian are themselves out of accord; while the same name is preserved in every member of the western branch. Upon the actual root employed opinions differ; some regard it as a *loan-word from Semitic*, which in *laish* approaches closely to $\lambda\acute{\iota}\varsigma$. But it seems impossible, without violence, to explain all current forms from this original, so that high authorities are disposed to trace their origin to some Indo-European root, as RAV to roar, LU or LEV destroy, or LIV dun-coloured. The tangle is perplexing. The lion is certainly associated with the East (though valid evidence attests the existence of lions in Greece into historic times), and one would have expected that so picturesque and commanding a creature once named would not have lost its title; that Asiatic emigrants would

have preserved its memory, and by adaptation, if not otherwise, retained its title, even if they passed out of its range of habitation; still less would the Aryans proper have lost or changed the name. The difficulties do not end here. Assuming Semitic borrowing, it is hard to explain the uniformity of European terminology; assuming Indo-European identity acquired in Asia, it is strange that the name should have been conserved by all the stocks, except those to whom the lion himself remained familiar. The Tiger, whose range extends northwards beyond Bactria, is etymologically imported from India, and so too the panther, *πάρδος* and *πάνθηρ* both coming of late borrowing. Camel is once again exotic, and *pilu* of Sanskrit, from the Persian *pil*, has no European congener. These are the great characteristic quadrupeds of the East, for size and make and mark more notable than any other in the animal kingdom. Being non-European all may have dropped into oblivion in western speech, but taken collectively they constitute a negative argument of some small weight against the Asiatic derivation of the Indo-European family. And the wild-ass, the jackal, and the ape reinforce the argument from silence.

Passing from negative to positive evidence, we will first group the quadrupeds with names of Indo-European pedigree. They are the *Bear* (*ursus*), *Beaver*, *Boar* (wild or tame), *Fox*, *Hare*, *Mouse*, *Otter*, *Squirrel* (*viverra*), *Wolf*. Though for the most part indecisive, the general complexion of the list is European rather than Asiatic, and two animals, the Beaver and the Otter, seem specifically European. In the latter case there is perfect correspondence of form, **Lit.** *udra* being absolutely identical with **Skt.** and **Zd.** *udra*, but in meaning, Greek, Sanskrit and Zend differ. It is possible, though the chance is rare, that distinct stocks fashioned independently words (identical in root and suffix) for distinct animals; it is more likely that in districts where the otter

was unknown, the designation was transferred to another animal of corresponding habitat. If so, assuredly the European otter was first owner of the superfluous name, not *vice versa*. The beaver stem shows like divergence of meaning. The beaver known to Teutonic, Lithuanian, and Latin vocabulary—though the animal seems now confined to Russia and Poland—appears in Zend as *bawri*, and in Sanskrit as *babhru*, denoting an animal of the large ichneumon kind. Now this is precisely what might be expected, the transference of a superfluous name (for the beaver is strange to India) to an animal bearing a rough general resemblance to the original. Precisely in this way the jackal of the East supplies the modern Greek with his name for badger (τζακάλης). Those who reject this account content themselves with questioning the etymological identity.

Snakes (*anguis*), worms (*χάμπη*, *vermis*), ants (**Zd.** *maoiri*), flies (*musca*), and other Indo-European vermin afford no topographical clue; they are ubiquitous.

Before leaving the mammals, it will be well to consider the list common to the *European group*, recognised in the south by Greek or Latin, in the north by Teutonic, Slavonic, or Lithuanian. The following comply with these conditions :—

	Greek.	Latin.	Celtic.	Slavonic.	Lettic.	Germanic.
Badger		<i>taxus</i> (late, prob. borrowed)				O.G. <i>dahs</i>
Boar		<i>aper</i>		<i>v-epri</i>		<i>Eber</i>
	[καπρος <i>caper</i>					O.N. <i>hafir</i>]
Hedgehog	ἐχῆνος			<i>jezi</i>	<i>ezys</i>	O.G. <i>igil</i>
Lynx	λύγξ				<i>luszis</i>	O.G. <i>luhs</i>
Marten		<i>martes</i>				O.G. <i>marder</i>
Rabbit (coney)	κόνικλος	<i>cuniculus coinin</i>				<i>Caninchen</i>
Seal	σέλαχος					O.G. <i>selah</i>
Stag	ἔλαφος		Cym. <i>eilon</i>	<i>jel-eni el-nis</i>		
	κεράος *	<i>cervus</i>	Cam. <i>karu</i>	<i>kravu karve</i>		<i>Hirsch</i>

* The 'horned,' and the specification is not complete, as in both Slav. and Lit. the word signifies 'cow.'

In this branch of the discussion the importance of *European consensus* has been strangely underrated or ignored. These animals are known to *all* the West, though possibly unknown as well as unpreserved by languages of the East. Now the upholders of an original Asiatic home are virtually at one in assuming the separation of stock dialects in the Asiatic period, in the regions east or south of the Caspian. Thus in the case of names common to *the whole of Europe* it is inferred that the animals were known and named on the far side of the Caspian, and the names faithfully preserved in after years by the various emigrant stocks. There is nothing in the present list to refute such a hypothesis, for the seal is a denizen of the Caspian as well as the Northern Seas, but it combines with the previous group to strengthen the impression of a European rather than Asiatic cradle of experience, and it is highly significant that *every noticeable European quadruped*, tame or wild, is included either in the Indo-European or the European unity.

Birds teach little. Besides the duck (*anas*) and goose (*anser*) which were perhaps domesticated, and omitting onomato-poetic names (such as cuckoo) which are valueless as evidence, the crane, crow, owl, pigeon (*columba*), thrush, quail, and probably vulture (*glede*) and falcon (*ἰκτίνοϛ* and perhaps *φῆνη*) are Indo-European, a few species, that is, singled out by size or cry or plumage or flight in the days before birds were much available for food. If there were proof that the duck and goose were not domesticated, the prominence of *water-fowl* would be worthy of remark, for to this category belongs *Sk. marala* (*merulus*), while both in Sanskrit and Greek the *κολυμβός* designates the grey diver.

For the group of water animals is more fertile in suggestion. The discrepancy between the generic European terms for fish (*piscis* and *ἰχθύϛ*) and the Eastern *matsya* has been paraded with some satisfaction by the advocates of Bactria.

“People starting from that central home in Asia,” writes Max Müller, “ought to have little knowledge of fishes.” The inference is flimsy. Wherever the Indo-Europeans were cradled, by river, lake, or sea, fish must have been known to them, and the discrepancy must be reckoned among the thousand casualties that have befallen speech. More valid inferences await us in this sphere, of which the name for eel yields the most vivid illustration. *Anguilla*, ἄγχελυς, **Lit.** *ungurys*, **Sl.** *agulja*, show a common term for an animal that appears not to exist in the Black Sea or Caspian or their tributary streams. Here then, at last, we are driven to a corner, and must accept the inference that the European unity was maintained at a point clear of the watersheds of the Euxine and the Caspian, that the ancestors of Greeks and Italians were in touch with ancestors of Slavs and Lithuanians at some point in Central or Western Europe which the evidence forbids us to place far east of Russia’s western frontier. This, if tenable, will prove decisive to the whole controversy.

Among water animals attesting an Indo-European unity is the crab (**Sk.** *karka*, κάρχα, *krebs*, **Sl.** (*k*)*rakŭ*); while European unity appears in the lobster (κάμαρος, [*homarus*], *Hummer*), the seal (σέλαχος, **O.N.** *sel-r*), perhaps the mussel* (*musculus*), and the oyster. The latter (ὄστρεον, *ostrea*, **Cel.** *oestren*, **Sl.** *ostrei*), Max Müller imputes to borrowing, claiming Greek for the original: but of the rest it is difficult to credit that they were carried from the Caspian as a common heritage by stocks so widely divergent as the Teutonic and the Greek. On the opposite assumption, that of European origin, their disappearance (except the crab, which has land representatives) was inevitable in the Eastern tongues. In so far they corroborate the evidence supplied by the eel.

* **Sk.** *čankha*, κόγχος, *congius* is of precarious meaning.

Passing from *fauna* to *flora*, we find the beech giving rise to vehement and frequently mistaken controversy. A common name (φηγός, *fagus*, *buocha*, *beeck*, and the unproved **pers.** *būk*) appears throughout the Western group, and is in many of them applied to the beech. The Eastern limit of the tree in Europe appears to be marked by a line drawn roughly from Königsberg past the East Polish frontier to the Crimea. Thus the community of name, assuming its primary association with the beech, becomes of great importance to the secondary issue in showing that the united Aryans, if of *European origin*, came not from Rokitno marshes or Russian steppes, but from some more Westerly district: but seeing that it reappears in Asia Minor, and skirts the South shores of the Caspian, it can contribute nothing to the main issue of European or Asiatic origin. The birch and probably the pine (πίτυς) are genuinely Indo-European, but grow equally in Asia and Europe. The evidence is quite insufficient to show that either the oak (δρῦς, **Sk.** *dru*=wood, **Zd.** *dru*=shaft, *tree*), ash (*ornus*, **Sk.** *arna*) or fir attained (or retained) identification in the Asiatic group, while the common name for withy (*vitis*), and probably too *populus*, by **Sk.** *pippala*, is descriptive rather than generic. Common to widely severed European stocks, Northern and Southern, are names for the alder (*alnus*), apple, ash, elm (*ulmus*), fir (ἑλάτη), hazel (*corulus*), maple, pine (πέυκη), willow (*salix*), yew (*taxus*), and other trees. As with the quadrupeds, so here, the list goes far towards exhausting the common and conspicuous trees, truly indigenous to Europe. Once more is it likely, is it credible, that the unity is due to a hypothetical period of common speech to South or East of the Caspian? It has all the marks of North or Central European derivation. One of the number, πέυκη, is of special interest; for while in Greek, Lithuanian, and Old German (*fiuh-ta*, whence *Fichte*), it

represents fir, it is applied in Sanskrit to the betel-nut palm. How naturally this transference of name would come about upon the theory of European origination is obvious.

As for cereals, rye and barley, **Sk.** and **Zd.** *yava* by ζεῖα, **Lit.** *java*, **Celt.** *corna*, and again **Zd.** *gurtak* by κριθή, *hordeum*, *gersta*, are the only Indo-European terms, and the latter is unspecialised to barley in the East. Those who are content with Geiger * to build on the evidence of silence, argue that for the cradle of the speech we must select an area suitable for barley and rye, but not for wheat, and urge North Europe upon this ground. But the conclusion cannot stand upon its own merits, and is more than usually precarious in making no allowance for agricultural as well as climatic conditions. That it accords with this hypothesis is all that may be said. To extend the argument further to the vetch (*ervum* and *cicer*), κάμπος, *malva*, and other Indo-European or European plants would add nothing to our main results. The term for hemp (**A.S.** *haenep*, κάμβαβις) shows complete Indo-European equivalence, but structure and form of correspondence indicate borrowing rather than primitive identity, and its origin is probably exotic.

The evidence of vocabulary taken as a whole declares then for an European origin. Other converging lines of evidence, partly phonological, partly genealogical, strongly support the same theory, and raise it to a high degree of probability. Is it possible to define still more closely the cunabula of the original stock? The hope of doing so depends upon the possibility of co-ordinating the results of linguistic study with the conclusions reached by independent lines of research, pursued by the ethnologist or palæontologist. For any such combination Max Müller emphatically holds that the time is not yet ripe; that for the

* *Development of Human Race*, p. 145-6.

present philologist and anthropologist must work on in isolation, following and determining their separate clues, trusting that at last their separate strands may converge in one. Yet that an eventual synthesis exists between philology and ethnology is certain; that it is discoverable is at least possible; and the time seems to have come to attempt constructive co-ordination. Even a false synthesis has its advantages, for its demolition will pave the way for some better substitute. A working hypothesis serves as a useful criterion, though it can only command assent by the cumulative support of collateral proofs.

There is much to encourage the attempt. On the one hand, there is the established unity of the European brotherhood of languages. Familiarity alone has dulled the sense of wonder at that marvellous phenomenon which a century ago would have been dismissed with incredulous derision. On the other hand, anthropologists and archæologists have been steadily reducing the number of racial varieties, which finally underlie the inextricable medley of European stocks. Few prominent anthropologists of the present day accept more than four or five at the most, and from that small total would subtract one or more as sporadic or obviously imported into some isolated corner, that for the present question may be fairly left out of account. The evidence tends to bring us back at no very distant antiquity to a Europe sparsely peopled by a very few well-differentiated types. This being so, it seems a scarcely insoluble problem to identify with approximate certainty the founders of Indo-European speech — if once a European origin can be established from the internal evidence of language—with one out of the few alternatives open for choice.

In dealing with Penka's theory, to which I now turn, it will be most convenient to adopt his own terminology, and understand by Aryan that blond dolichocephalic North-

European race with whom he endeavours to associate the origination of Indo-European speech. Penka's two principal works, the *Origines Ariacae* and *Die Herkunft der Arier*, offer the most coherent and comprehensive synthesis of racial and linguistic descent yet propounded, and English readers may welcome a compendious statement of conclusions that have not yet been summarised in English books.

Recognising the full intricacy of the anthropological problem, and assuming it certain that somewhere amid Aryan-speaking peoples exists the racial type, which developed the language now common to all—assuming, that is, that Aryan is not Negroid, or Chinese, or Dravidian, or Mongolian by derivation—Penka first asks, What are the existent types? They are seven in all—Indian, Iranian, S. European, Slavic, two Celtic, and the Teutonic, or more specifically, Germano-Scandinavian. The Indian and Iranian do not come in question where *European* ancestry is under consideration, and in no case could they be regarded as the racial progenitors of the Aryan-speaking populations of Europe. The south European type may be ignored, for there is conclusive evidence that the aborigines of Greece and Italy, from whom this type indubitably derives, Etruscans, Iapygians, Pelasgians or otherwise, were not of Aryan speech, but succumbed before the Italic and Hellenic immigrants. Of the two Celtic stocks, one (styled sometimes Milesian) seems associated with Cro-Magnon pedigree, and thus may be discarded. The second, in skull-index, in skin colour, and in general build, shows such marked affinities with the Slavic, that the two may be grouped together. Thus the choice practically narrows itself to the full blond dolichocephalic Teutonic on the one hand, and the shorter darker brachycephalic man of Celto-Slavonic type on the other. Of these two, one, and one only, exhibits traces of itself *everywhere* among the various populations for which philo-

logy or archæology attest Aryan antecedents. It is the last-named, the blue-eyed, fair-haired men of the Germano-Scandinavian family. Everywhere, and throughout all history, it confronts us, and challenges explanation. It appears pictorially on Egyptian monuments two thousand years before Christ. In the pages of the Rig Veda the white skins of the invading and triumphant Aryans are expressly contrasted with the black-skinned vanquished Dasyu. The earliest European historians, from Strabo to Jordanes, one after another describe the type in their portraits of Cimbrians and Teutons, Gauls and Franks, Goths and Visigoths. To-day we find it not only throughout all northern and central Europe and the British Isles, but it arrests the observer's eye among the northern ranges of the Iberian peninsula, in Italian Piedmont, in the mountains of the Peloponnese, in remarkable purity among the Sphakiots of Crete, and, passing to Africa, reveals itself in the hill-country of Algiers* and Morocco, as well as upon the flanks of the Aures and the Atlas range. It crops out freely in the Ossets and other tribes on either side the great Caucasian range; it has its offshoots among the Tartars of the Kirghiz steppes. It reappears among the (Iranian) Galtshas of Persia, in the hill folk of Afghanistan, in the Siah Posch or Kaffirs of the Hindu-Koosh. No other stock can claim the same ubiquity, or *ubiquity of like sporadic kind*.

This then as a first presumption might be regarded as the Aryan stock. It is the one stock which gives unity upon the *physiological* side to Aryan speaking people: is there not a likelihood that from it too derived the philological unity? With a view to determining this it is important to trace its pedigree, history and fortunes, and see how far they favour such a hypothesis.

* On the racial identity of the Algerian Kabyles with the red Celt, see Sayce's emphatic testimony at British Association, 1887.

Alone among races it can claim continuity of European development. The cranial index, which is the chief court of appeal for the identification of prehistoric European races, is dolichocephalic. This carries us back to the quaternary period. Already in the glacial epoch, when all north-eastern Europe, from Mecklenburg to Russia, lay an uninhabitable wilderness of ice, palæolithic man makes his appearance in central Europe, and his cranial index, as attested by the Engis skull,—and, indeed, all skulls securely attributable to the quaternary period—is dolichocephalic. It is to the stern environment of palæolithic man throughout these immemorial ages that Penka would attribute the original differentiation of the blond type. That primitive man was not blond is certain; that he was produced by racial differentiation, not by independent creation, men of science are now agreed; that the long-headed type may be dated back to palæolithic times, and precedes the short-headed in Europe, is the verdict of the evidence as it now stands. That it arose out of the conditions of the quaternary epoch is the natural inference. It is the outcome of the long struggle with an ice-bound world, by which European man was slowly inured to the strength of frame and the hardy resourcefulness of mind which, late in time, has secured to him the leadership of the race.

At the close of the glacial epoch, man, it would seem, like the flora which helped him to eke out subsistence, and the reindeer which was his one animal friend, moved northwards. Such at least is the general inference drawn from the difficult problem known as the Hiatus. Between palæolithic man and neolithic lies a gulf. Man of the quaternary stage, the so-called epoch of Madeleine, is the hunter and the fisherman, without domestic animals, without agriculture, without utensils or the rudest architectural device, as yet unable to grind or polish the split stones with which he

waged his precarious struggle with the mammoth, the ice-bear, and the larger felines, which still ranged the plains and woods of Europe. With man of the neolithic period, the epoch so-called of Robenhausen, all this is changed. There is an advance that means a gap of centuries. In some localities, in parts of France for instance, in much, if not all, of Germany and Switzerland, in Austria, and as some too will have it, in Britain, the gap seems absolute; in others it is imperfectly bridged, as for instance by the Cro-Magnon men. When neolithic man appears, not only his acquisitions and his habits, but he too himself is of a different type. The long-headed skull of the quaternary drift is replaced by the short-headed of neolithic times. Avoiding long discussion on this head, and leaving on one side the Cro-Magnon men, who, whether an original or immigrant stock, seem to have advanced from the south-west to the the occupation of France, Belgium, and the British Isles, we discern two new invading types; first, the Iberian, or Ibero-Semitic, moving upwards by way of Spain; and—of far more import for language and for anthropology—the Turanian stock, advancing from Asia and the East, bringing with them the products and arts of Eastern civilisation, and peopling eastern and central Europe with the dark-skinned short-headed type, known as the Melanochroic, which to-day still retains the numerical superiority in Europe.

In one region of Europe, and one alone, there is evidence of a continuous development—in Scandinavia. This country presents the archæologist with problems to which different solutions have been given. From grey antiquity we find there an intermixture of skulls, partly of brachycephalic, partly of dolichocephalic formation. There was a mixed population—the one a small minority, corresponding to the Mongolian type of the modern Ugro-Finnish tribes, the other in all essential characteristics to that of the modern

Swede. The older interpretation assumed that the brachycephalic remains belonged to the first occupants, progenitors of the modern Lapps or Finns. But sounder research concludes that the dolichocephalic population can claim equal antiquity: that looking backward, they are of the same order as the dolichocephalic skulls that belong to the palæolithic age; looking forward, the indubitable representatives of the mediæval Frank and the modern Swede. The theory that a population of earlier Lapps was pushed northward by the advance of the fair whites has not been confirmed; on the contrary, it appears that the Lapps eventually entered Scandinavia from the north, and that between them and southern Scandinavia lay, in these prehistoric times, an impassable frozen barrier of hill, morass, and plain, which yields no evidence of having been occupied or traversed by man at this primitive stage. The second brachycephalic order of skulls (in percentage not exceeding ten per cent.) must represent then a pristine population that died out, or a Mongolian infusion that, as serfs or associates, formed a part of the blond Aryan community. This dolichocephalic race then shows here, through the stone age into the bronze age and the iron, a unique instance of continuous development. The famous kitchen middens found on the south-eastern coasts of the Scandinavian peninsula are the imperishable record of their slow advance. Steenstrup assigns for these massed accumulations of bones and shells and other refuse, periods amounting to 10,000 or 12,000 years, through which advance is barely, if at all, perceptible. Then, whether from impulse communicated from without, or as others (Steenstrup, Engelhardt, Evans, Torrell, Montelius), prefer to think, by self-development resulting from improved conditions, advance begins. The ruder implements mingle with others of superior form and finish, bearing however the stamp of a self-developing transition.

not of mere importation, as elsewhere in Europe, at the hands of a more gifted invading race. The mesolithic passes to the neolithic. The kitchen-midden men become the Dolmen-builders, and the period of advance begins.

This gradual and unbroken continuity of development, nowhere else traceable or admissible, carries with it an important inference. Had there been a great subjugation, or some overwhelming inroad of a superior race capable of supplanting and exterminating every trace of the older language, it is almost certain that here, as elsewhere, it would reveal its traces to the archæologist. But if these were Aryan-speaking men, or if development of language shared the continuity of development in civilisation and the arts, then it is certain that the direction of Aryan migration was not from Russia northwards, but in the converse direction; for language and archæology combine to prove that a higher stage than that of the kitchen-midden period had been attained *before* the great migration and separation of the Aryan stocks.*

Next comes, untraceable in detail whatever theory be adopted, the period of the great expansion, with its development into distinct Aryan stocks and languages. Archæology traces the Dolmen-builders of the North passing southward through France and Spain to Africa, and extending the milestones of their march even to the borders of Egypt, while in language the story of their expansion survives in the distribution of the Aryan tongues. Everywhere it was carried by the blond dolichocephalic race that was cradled on the Baltic shores; everywhere, as we have seen,

* *H. A.*, pp. 34-6. As a side issue, the argument rebuts Pöschke's hasty hypothesis of origination near the Rokitno swamps, between the Dnieper and the Bug. Anthropologically, it is quite untenable to attribute the persistent blond type of the North to local depigmentation observed over so small a district. And the theory finds no independent corroboration from either language or early remains.

in Europe, Africa, or Asia, he has left representatives perpetuating his physical characteristics. The key is found to the sporadic appearance of the type in all regions that betray Aryan influence. The hypothesis of so prolific and exuberant an expansion of a single race from this centre seems startling. Yet there is much to support it. Always, from the very dawn of history, we are faced by the same phenomena of countless hordes of northern men streaming eastward, southward, westward, first vanquishing and then by gradual absorption coalescing with the indigenous population. The multitudinous irruptions of the Cimbrians and Teutons are but historic repetitions of the great prehistoric movements which spread the Aryan tongue and features over the European world. The records of Egypt vouch for the invasion of the country by a great European coalition, with contingents, as it would appear, from Sicily, Italy, and Greece, in the reign of Menephtah I, which falls probably into the fourteenth century B.C. The Galatai of Asia Minor are but one less evanescent sample of myriad precursors, and themselves anticipate the Crusaders of later date. Always the early chroniclers, from Strabo and Tacitus to Ammian, Procopius and Jordanes, trace German or Celt, Lombard or Vandal, Franks or Juts, back to Scandinavia as the hive from which they swarmed. It was the *vagina et officina gentium*, the sheath and factory of nations. Movements are from the North, southward and westward, not *vice versa*. The process still continues. Since the days of Gustavus Adolphus, peaceable forms of expansion have indeed superseded the periodical inundations of armed warriors. But in new channels the incessant stream of emigration still runs on, crossing the Atlantic instead of flooding populous Europe. Always too, as a long chain of evidence shows, it is the Aryan's fate to succumb even in conquering. Only in the Scandinavian north does he retain his pristine

vigour. In Norway, at this present day, the blond type remains universal, corresponding to the Germans and Franks of the earlier Christian centuries. To-day the Norwegians not only retain the old physical characteristics, but exhibit the highest average stature, the most prolific productiveness, the lowest rate of child mortality, the highest average longevity of any European race. The further we recede from Baltic shores, the less stable it becomes. In Denmark, North Germany, and the British Isles, it best maintains itself. Elsewhere it succumbs before the Turanian black-haired, short-headed type of European man. The isolated districts where it survives are habitually high table lands or exposed sea-coasts, which most nearly approximate in climatic condition to that of the Scandinavian peninsula. High altitudes do not *produce*, but can *conserve* the blond type that has found its way there. Its capacity for successful acclimatisation is small; immeasurably inferior, for instance, to that of the Jewish stock. The hundreds of thousands of Northern barbarians who poured into Spain and Italy like a deluge, from the days of the Roman Empire to the close of the Middle Ages, have left there scarcely a trace. In France, the old Frank type is fast yielding to the Melanochroic, and is practically confined to the north. The pictures of old masters shew how far more common, alike in Italy and Germany, was the blond type only four or five centuries ago than it now is. And still the process of retrogression is visibly continuing.

In the light of these impressive facts, a theory, which novelty puts at a disadvantage, grows more credible.

To the alternative hypothesis, namely, that the Aryan language was the property of the Slavo-Celtic stock, the objections are far more formidable; they seem, indeed, insuperable. This melanochroic type appears in Central

Europe in the neolithic, not the quaternary period. It represents a wave of Asiatic immigration comparable to that of the Huns in the fifth century, or the Mongols in the thirteenth. The proof of this rests not only on the evidence of physical conformation, but on the unassailable testimony of Nephrit axes and other implements which Asia only could have furnished. These immigrants brought with them a higher civilisation than that as yet attained by the Northern whites, and in all probability introduced into Europe the various orders of domesticated animals, of which the dog alone appears to have been known to early kitchen-midden men. But it is almost impossible to suppose that they likewise imposed upon them their language. Not only because their racial affinities, so far as that is a trustworthy clue, imply some form of Turanian speech, but for the far more solid reason that this brachycephalic invasion never effected a lodgement in the northern regions occupied by the blond Aryans. On the contrary, whenever and wherever the two types do eventually intermingle, the long skulls appear to denote the conquering, the short, broad skull the subjugated race. Such is the evidence gleaned from the graves, where, as a rule, the remains of chiefs are of the long-headed type. As another significant fact, strongholds become most numerous where the two types are most evenly matched, in Gaul, for instance, in Britain, and in the Dnieper district, plainly attesting the defensive struggle of an indigenous race against a dreaded invader. In the seats of the blond Aryan, and throughout North Germany, cities, strongholds or walled defences were (as Tacitus, in later times, bears witness) unknown. In the Middle Ages it still remained true, far more markedly than is now the case, that throughout Germany and Switzerland and other European countries the blond type was proportionately far more prevalent among the aristocracy,

while the serfs remained predominantly brachycephalic. That a prolific aristocracy of immigrant warriors should have gradually established their own language in vanquished territory is conceivable; that a race of serfs should have linguistically annexed regions to which they never penetrated is an impossibility.

Such then, mainly from the racial side, is the case in favour of Scandinavia and North Germany as the cradle of Aryan speech. It finds speaking corroborations from the linguistic side. The northern cast of the common Indo-European and European vocabulary in respect to *fauna* and *flora*, and the somewhat large infusion of marine names become intelligible. It is said that every single animal, bird, or tree that belongs to the common speech is a native of the Scandinavian peninsula. The bone accumulations show remains of the *Bear*, *Beaver*, *Boar*, *Deer*, *Dog*, *Duck*, *Fox*, *Goose*, *Lynx*, *Mouse*, *Otter*, and *Wolf*, to which with some force may be added the *Eagle* and the *Swan*. The cow, goat, horse, and sheep all appear in the neolithic period, to which the development of the mother speech (*Ursprache*) must be assigned, and the civilisation of which is in striking accord with the demands of Indo-European lexicography.

And passing from vocabulary to language-structure, certain phenomena find new and suggestive elucidation. It is well known that Ugro-Finnish dialects, though of the agglutinative order, and classed with the other agglutinative forms of Mongolian speech, show remarkable approximations to the inflectional methods of Aryan in their treatment of declensional and conjugational suffixes. The problem has been a puzzle to philologists, some of whom have actually regarded Finnish as attaining the inflectional stage. As we pass eastwards to the allied Ural-Altaic, Samoyedic, or Turko-Tataric populations these peculiarities disappear.

Alongside of this morphological approximation, there are arresting resemblances in vocabulary, which lie deeper than mere borrowing, and affect pronominal stems, numerals, and primary verb roots. Now anthropology shows an exact coincidence to this state of things. From very early times there must have been a strong infusion of men of the blond type among the Ugro-Finnish population, that extends eastward from Scandinavia. In Finland, the blond type appears side by side with the dark brachycephalic almost as freely as is seen for instance in Scotland or in Wales. As we move eastward the blond strain dwindles, and ere Asia is reached wholly disappears. The testimony of language and of anthropology combine to prove an early and a large infusion of the Scandinavian blonds amid the neighbouring tribes, imprinting a lasting stamp upon the physiognomy alike of feature and of speech. And the contact seems fairly traceable to a period earlier than that of the Aryan dispersion.

The reversed direction of linguistic movement involves an entire reconsideration of established views upon phonology. Within the last ten or fifteen years the phonetic assumptions of Schleicher, Curtius, and inquirers of the same school, have been revolutionised on *internal* evidence of unanswerable force, by the completer researches of Osthoff, Brugmann, Verner, and other workers in the same field. The false views were in many cases due to the assumption, then practically unquestioned, that Sanskrit and Zend represented the primitive phonology more faithfully than the Western languages. Penka claims that the hypothesis of an opposite movement explains much that has hitherto seemed dark. In Zend, and in Sanskrit still more completely, the primitive vowel-gradations have been more irrevocably confused and obliterated than in any of the European languages; A E O have been merged into a uniform A. The consonantal groups

offer more perplexing problems, and interesting coincidences of treatment. In the guttural series sibilant of an original *k* and *g* (palatal explosives) to *s* and *z* is found alike in the Letto-Slavonic and the Indo-Iranian groups. Penka sees in this an evidence of these two groups maintaining relation, or else being exposed to like conditions subsequently to the differentiation of groups. It finds a natural explanation in the adoption of Aryan speech by a population, whose phonetic idiosyncrasies naturally produced this modification. It is parallel to the French representation of Latin *c* by the soft *c* or *ç*; and the asserted sibilant of *k* in loan-words by the Ugro-Finnic tribes is a speaking analogy, which suggests that the change is due throughout to Turanian proclivities. Similarly, in the phenomena known as labialisation of the gutturals, as may be seen in Brugmann's careful classification, the Eastern languages again form with Armenian, Albanian, Lithuanian and Slavonic, a distinct group contrasted with the European orders, Greek, Latin, and Teutonic. The assumption of eastward progress renders natural and intelligible a community of treatment which otherwise baffles explanation.

In the complicated question of the Aspirates, Penka upholds a similar explanation. Philologists know that Greek, Sanskrit, and Iranian constantly exhibit the aspirated tenuis, where the tenuis simple appears in Celtic, Latin, Lithuanian, and Slavic. Curtius and others maintained that the aspirate was a later development imported into the Eastern group. Penka casts in his lot with those who hold that the original language knew only aspirated mutes, and observes that to this day all North-German dialects retain in articulation the aspirated tenuis, which in the current spelling appears as tenuis simple.* He attributes the disappearance

* Saying for instance, *Khind*, *Khunst*. Ujfalvy's contradiction of this, *Berçeau des Aryas*, p. 30, arises from phonological ignorance.

of the aspirate in the Western group to the phonetic habit of the populations Aryanised over the European area. The controversy is far too complicated for examination in these pages, and Brugmann decisively vindicates the unaspirated *tenuis* for the original speech, but upon any showing there remains the salient fact that Greek here groups itself with the Eastern division, a phenomenon which it is extremely hard to reconcile with any theory of Asiatic origin, which inevitably associates Greek with Italic, and exposes it to similar environment long after its separation from Indian and Iranian.

Finally, the series of sound-shiftings comprehended under "Grimm's law," the explanation of which involves such grave difficulties, is thus re-read by light of the new theory. In the Ugro-Finnic tongues neither the aspirated *tenuis* (*ph*, *kh*, *th*) nor the aspirated *mediæ* (*bh*, *gh*, *dh*) find a place, while the simple *mediæ*, though existent, appear to have been difficult and alien sounds, in origin derivative from their corresponding *tenuis*. This being so, it is intelligible enough that in adopting Aryan speech Turanian populations (like modern Hungarians in borrowing German terms) should have represented Aryan *mediæ* by the corresponding *tenuis*, while the unfamiliar aspirates, *gh*, *bh*, *dh*, naturally enough fell to *g*, *b*, *d*. The predominance of the Turanian strain supplies the true explanation of the phonetic habitudes of the South-German dialects. The second great sound-shifting, affecting the High German dialects, commenced during the earlier Christian centuries, and passed from the south northwards, representing the ground gradually gained by the Turanian element on the pure German (or Aryan) stock. It was achieved through monastic and other civilising influences, by which the darker white has gradually inoculated and superseded the blond, and in point of sound-change the supersession never became complete, taking most effect

among the Bavarians and the Southern tribes most strongly permeated with a Turanian element, and least where the primitive blond stock experienced least of allophylic infusion.

Lastly, Penka appeals to mythology and legend in support of his hypothesis. In Greek literature he finds clear traces of the pristine northern home, not merely in the *Odyssey* at large, the structure of which Müllenhoff identifies with the German tale of *Orendel*, the historic hero of the Northern Sea, but more specifically still in the conception and legend of *Oceanus*, and in the notice of *Cimmerian* folk—etymologically “the men of darkness,” and in history appearing as the *Cimbri*—“beside the bounds of swift-flowing ocean, shrouded in mist and cloud, and never does the shining sun look down upon them with his rays, neither when he climbs the vault of starry heaven, nor when he turns again from heaven’s height towards earth, but deathly night is spread o’er miserable mortals*”; while the tall long-locked progenitors of the race are reproduced in the doughty *Laistrygones*, “a host past number, like to the giants, not men,”† of whom is written the strange record:—“There shepherd cries to shepherd as he drives home the flock, and he that drives afield answers the call: there, sleep foregone, might a man earn double wage, one for herding the cows, the other for pasturing white-fleeced flocks, so near are the outgoings of the night and of the day.”‡ Other unconscious obligations of *Homer* to Northern lore, to the phenomena of icebergs in his description of the isle of *Aeolus*, and to the northern legend of the ferry-men of the dead in his account of the *Phæacians*, would similarly be explained as confused reminiscences rather than as garbled reports gained from Phœnician mariners.

A similar origin may underlie the Persian description of the *Aryas’* land in the first chapter of the *Vendidad*, where

* *Od.* xi. 14-19. † *Od.* x. 119. ‡ *Od.* x. 81-6.

‘the winter months are ten, and the months of summer two, and these cold for the waters, cold for the earth, cold for the trees; and winter falls there, with the worst of its plagues.’

In the essay in which Van den Gheyn undertakes to traverse the arguments of Penka, apart from partial demurrers upon the anthropological side, which Penka himself considers and overrules, there is little to invalidate the cumulative strength of the case which he has made out, and which at present offers the most complete and satisfactory synthesis that exists of problems which are scarcely likely to attain complete historic certitude.

GLIMPSES OF THE UNSEEN UNIVERSE BY THE AID OF PHOTOGRAPHY.

BY ISAAC ROBERTS, F.R.A.S., F.G.S.

THE Universe about which I shall endeavour to address you this evening is in the boundless space which surrounds the earth, and consists, as far as our present knowledge extends, of a sun, planets, satellites, comets, stars, and nebulae. The two latter, the stars and nebulae, will occupy chiefly our attention this evening, and, in order to justify the title of this address, I shall first briefly glance at the celestial objects which have already been seen, though seen only by a limited number of persons, and then show some of the latest extensions of human vision by the aid of photography.

Let us for a moment look back in time 280 years (1610), when the most learned men were content to know that the earth was the centre of the universe, and the sun and stars subsidiary to it, and, having no optical aids, their eyes would enable them to count some 3000 of the stars, and these, together with the earth, would be to them the extent of the universe as then known; but a change was at hand, for Galileo had invented a telescope, a marvellous instrument, that showed vastly greater numbers of stars, and also, that some of them presented strange appearances. The telescope was only a little one, about the size of this (*shown*), but much inferior in quality. With it he saw the lunar craters, the satellites of Jupiter, the ring of Saturn, the phases of Venus, the spots on the sun, and many other marvels of the sky, which, up to that time, had formed parts of the unseen universe, and were quite unknown previously to mankind. During the centuries that have passed away between the

time when Galileo lived and the present, the developments of the telescope in perfection and in power and size have, as we all know, been very great, and since the time of Sir William Herschell (1780), the improvements have proceeded by leaps and bounds; but as it is not a part of my subject this evening to trace the history of astronomical instruments, I shall limit my references to a few of the very large telescopes which are of recent construction, and then place before you delineated records of some of the revelations concerning the unseen universe which by their aid have been made manifest.

Sir William Herschell was the first to construct a reflecting telescope of the large aperture of four feet, and forty feet focal length. It was completed just one hundred years ago—in 1789, and by skilful and untiring energy in using it till he was upwards of four score years of age, he brought to the knowledge of mankind a vast number of the secrets of the unseen universe. The great Herschell telescope was followed by one still larger, made by the Earl of Rosse between the years 1822 and 1845. The speculum is six feet in diameter and fifty-four feet focal length. (*Shown on the screen and described.*)

Our illustrious townsman, the late William Lassell, constructed a reflecting telescope of four feet aperture and took it to Malta, where he observed with it close double stars, nebulae, planets, and their satellites. (*Photo shown on the screen and described.*) A drawing of it is published in the *Memoirs of the Royal Astronomical Society*, vol. xxxvi.

Mr. Newall at Gateshead has a refracting telescope of twenty-five inches aperture, made by Cooke of York, and it was the first large one of this class that was made up to the year 1870. (*Photo shown on the screen and described.*)

Since 1870 the large telescopes, both of the reflecting and refracting class, have been rapidly multiplied in several

countries; one is erected at Melbourne, another at Nice, and another in Vienna. In America there are several large refractors, the latest and by far the largest of them is at Mount Hamilton in California, and was presented to the nation by the late James Lick. The object glass is thirty-six inches in diameter and forty-six feet focal length. (*Photo shown on the screen and described.*)

All the telescopes to which I have so far referred are constructed for observing celestial objects with the eye directly applied to them, but during the past five years another form of telescope has been constructed for exclusively photographic application. At present, or rather until the end of last year, only two such telescopes of comparatively large size were in existence. One of them, a 13-inch refractor, was made by the Brothers Henry for the Paris observatory, and the other, a 20-inch reflector was made for me by Sir Howard Grubb of Dublin. (*Photo shown on the screen and described.*)

We have now considered with sufficient detail for the present the gigantic and costly instruments that have with utmost ingenuity and perfection been constructed with the object of wresting some of the hidden secrets of the unseen universe, so as to reveal them to us, and thereby increase our knowledge. We will now pass on to examine some of the records concerning the secrets themselves, as they have with the greatest care and labour been presented to us by the several eminent astronomers, who have spent most of their lives in using the instruments for this purpose. The evidence which they have left for us, will best be appreciated and understood if I show you on the screen drawings of some of the objects as they were made by eye observations with the large telescopes, and simultaneously show the same objects as they are now revealed to us by the aid of photography.

Catalogues of stars and nebulae have been made by many

astronomers, both ancient and modern, and the largest modern catalogue was made by Argelander, the great German astronomer, at Bonn, between the years 1852 and 1862. The telescope he used for the work was only about three inches aperture, and by its aid he charted 324,000 stars in the northern hemisphere of the sky, and, as an illustration, we will now project upon the left-hand screen that portion of the sky comprised within a circle of one degree radius with the North Pole as the centre. Within this circle Argelander has, with much labour, charted 38 stars; and upon the right-hand screen we project, for simultaneous comparison, a photograph of the same sky space, showing 1,270 stars which were accurately charted in one and a half hour's time. As another illustration, we will project upon the left-hand screen a portion of the sky in the constellation Cygnus, where Argelander has charted 94 stars, and, for comparison, throw upon the right-hand screen a photograph of the same region, taken with an exposure of only one hour, which shows more than 16,000 stars. It will be apparent to you, even on casual inspection, that the power of registering the positions, numbers, and magnitudes of the stars with accuracy is now in our hands, and we may further assert that it is so for the first time in the history of our race; but great as the advance is in the method of charting the stars by photography, there is another of as great importance in the delineation of nebulae, a class of celestial objects that has hitherto remained a puzzle to all astronomers, notwithstanding the closest scrutiny and study by the aid of the great instruments that have been made to examine them. The nebulae have, by spectrum analysis, been proved to be gaseous—to consist of various gases in a hot glowing state—or else, as Mr. Lockyer has recently suggested, of solid particles of matter colliding against each other in space, with such force that they are pulverized and converted



THE DUMBBELL NEBULA IN VULPECULA.

From a Photograph taken at Maghull on the 3rd October, 1888,

By ISAAC ROBERTS.

into a glowing gas, with the result that we are enabled to see them, and to analyse them by the aid of the spectroscope. Laplace (1799) long ago speculated that of such stuff the sun, the stars, and all worlds are made, and the evidence obtained by photography is rapidly accumulating during the past two or three years, which tends to show, like spectrum analysis, that the nebular hypothesis will probably soon be capable of demonstration ; but I am anticipating a little, and must now draw your attention to the nebula that appears on the photograph thrown upon the left-hand screen. It is known as the Dumbbell nebula, in Vulpecula, and for comparison with it, we show upon the right-hand screen a photograph of a drawing of it by the eminent astronomer, Trouvelot, and also a drawing by Lassell. Both drawings have been most carefully made, and are the best delineations of the object that we have, but you can see, by comparing them with the photograph, that important details which are essential to enable us to understand the character of the nebula are not shown. The photograph shows a globular nebula surrounded by a nebulous rounded ring, which gives the globular mass somewhat the appearance of a dumbbell, or an hour glass. Annexed is a copy of the photograph.

Another nebula that has been closely studied by astronomers is the great Orion nebula. Several drawings have been made of it, but the most elaborate is that by Lord Rosse, with the six-foot reflector, which occupied in its preparation "every available hour during seven seasons." On the left hand screen is a photo-copy of Lord Rosse's drawing, and on the right-hand screen a photograph of the nebula, which I took on the 4th February, 1889. There are several points of resemblance between the drawing and the photograph, and our sympathy is strongly drawn to the patient delineators who, during seven seasons of the winter months, stood on exposed platforms, without cover or shelter, to watch and

draw again and again the multitudinous and difficult details and fine shadings that are shown on the drawing, but when the result is compared with the photograph, which was taken with an exposure of only three and a half hours, we are compelled to call the work of the delineators crude and unsatisfactory, not through want of skill on their part, but on account of the great difficulties of seeing and drawing such faint misty matter.

Annexed is a copy of the photograph.

The group of stars known as the Pleiades has been scrutinised by all the astronomers possessing large telescopes, but only in a vague, disputable manner, has it been by some asserted, and denied by others, that they saw some nebulosity amongst the group, though the Merope nebula is easily seen. Prof. Weiss, of Vienna, who observes with the 27-in. Grubb refractor, prepared a drawing of what he saw, or thought he saw, as *nebulæ*, and on the left-hand screen is shown a photo-copy of his drawing. On the right-hand screen is also shown a photograph of the Pleiades, which I took on the 8th December, 1883, with an exposure of four hours, and it shows the same extent of nebulosity as that which my photograph taken in December, 1886, proved for the first time to be in this group of stars. There is no resemblance traceable between the drawing and the photograph, though Prof. Weiss is one of the most competent and careful of observers.

Annexed is a copy of the photograph.

One of the best known of the *nebulæ* is the Great Nebula in Andromeda, which on a clear night appears to the naked eye as a small patch of diffused faint light. Many drawings of it have been made, but that by Trouvelot is the best of them, a photo-copy of which is shown on the left hand screen, and, for comparison with it, a photograph of the nebula which I took on the 29th December, 1888, with



THE GREAT NEBULA IN ORION.

From a Photograph taken at Maghull on the 4th February, 1889,
By ISAAC ROBERTS.



NEBULÆ IN THE PLEIADES.

From a Photograph taken at Maghull on the 8th December, 1888,
By ISAAC ROBERTS.



THE GREAT NEBULA IN ANDROMEDA.

From a Photograph taken at Maghull on the 29th December, 1888,
By ISAAC ROBERTS.

an exposure of four hours. The drawing shows an irregular extension of nebulosity, with a condensation in the middle, and two dark streaks pointing in a direction nearly parallel with the greatest elongation, both streaks beginning and ending abruptly. The photograph, on the contrary, gives a very different interpretation, for it shows the nebula to be a symmetrical oval one, having rings somewhat resembling those of Saturn, and with a dense central condensation. The dark streaks are seen to be divisions between the rings, which are on a scale so vast that the mind is unable to realise either their size or the distance of the nebula from the earth.

Annexed is a photograph of the nebula.

You can now, I trust, form some idea, though it may be vague, of the stellar universe, and probably the widening out of our conception of its vastness will have impressed you most powerfully. Three centuries ago men believed the universe to consist of some three thousand small bodies called stars, and that they were subsidiary to the earth. One century ago, nay, even thirty years ago, few astronomers would have ventured to teach that there were more than twenty millions of stars in existence, and the most eminent astronomers of the present day would, so recently as four years ago, not feel themselves justified in asserting that the great telescopes could show more than fifty millions; but now that the photographs, some of which you have just seen, show more than sixteen thousand stars on the small space of four square degrees of sky, a space that would be covered by a sixpenny piece held out at arm's length from the eye, it is easy to calculate and then to infer with considerable confidence that there are at least one hundred and seventy millions of stars, and when we have brought ourselves to realise this probability, fortified as it is by photography, that the longer we expose a prepared plate to a clear sky, even

where not one star is visible to eyesight, the greater is the number of stars imprinted upon it, then, what is more natural than the inference that the stars are strewn over the infinite space as thickly crowded as if we were looking at a cloud of dust, of which the particles are innumerable. We know there is a limit to the number of particles in the dust cloud, but who shall say that there is a limit to the stellar universe?

What are the myriads of stars we now know to exist? They are not worlds, for they are intensely hot masses, like the sun, and are at distances so great that the nearest to us yet found amongst them is 225,000 times greater than the distance of the earth from the sun. Each one of them may be larger than the sun, and each one may be the centre and governor of a system of planets or worlds, and each world may be the colony of some forms of life, but these are, at present, speculations, and man may never be able to demonstrate the truth of them; but with our ever-increasing powers of observation, and ability to obtain and preserve for future correlation, accurate records of the positions and magnitudes of some millions of the stars, our successors in the near future will be able to deduce from them the laws that govern the movements of the sun and the stars, for they are alike, every one of them, in rapid motion, so as ultimately to reduce what now appears to us like chaos to such order that the course in space of the star-suns, as well as our solar system, will be known, and the astronomers of the future will watch each star-sun, leading his train of planets round about their gigantic orbits, where one revolution may occupy thousands, or even millions, of years in its accomplishment, with the clearness that we can now watch the revolution of the microscopic speck of dust man proudly calls the Earth in 365 days. The nebulae also may be watched from the gaseous state to the state of solidification, and new worlds

be seen to be evolved from material air. All these and more are now conceived to be possibilities of the future, though countless years may elapse before man can demonstrate them; but, if Hipparcus, in the year 128 B.C., had been able to photograph the sky as we now can do, what marvels and mysteries should we now be able to unravel; but vain is regret, our work is to make the records in the present, so that our successors, on or before the year A.D. 3889, will be in possession of some of the grand secrets which we are only permitted to enjoy in anticipation and in hope.

THE CHANGES OF DYNASTY, AND OF NATIONAL,
POLITICAL, AND RELIGIOUS SENTIMENT IN
FRANCE, AS ILLUSTRATED BY THE FRENCH
COINAGE FROM 500 B.C. TO THE PRESENT
TIME.

By J. BIRKBECK NEVINS, M.D., LOND.

THE numerous, rapid, and important changes that have been made in the French coinage, both in its designs and its legends, during the last hundred years (1789 to 1889) first suggested the idea embodied in the title of the following paper—a theme which has not apparently been developed by other numismatists. This circumstance is not surprising, for in looking at the French coinage previous to 1789, one of its most striking, if not actually the most striking, of its features is its intense conservatism—the same legends and the same devices having been preserved for hundreds of years in succession almost without change.

In looking backward, however, through the whole period of French coinage, changes of interest may be traced in connection with the various changes of dynasty in that country, dating back from the time of the Greek colonies on the Mediterranean coast 500 years B.C.; and by the study of these ancient changes the interest and importance of the modern ones can be more fully appreciated. It will be necessary therefore to take a brief survey of the ancient as well as of the modern coinages, though the earlier ones exhibit nothing of the striking features which succeed each other so rapidly during the last hundred years.

GREEK COLONIAL OR GAULISH PERIOD, 500 B.C. TO 50 B.C.

The first French coins—termed Gaulish—are those which have been found in the old Greek colonies of Marseilles, and on the Mediterranean. These are stamped by the usual characteristics of Greek coins, viz., the effigy or the emblem of a Greek divinity, and the Greek letters in which the name of the city is inscribed—as ΜΑΣΣΑ-ΑΙΗΤΩΝ for Marseilles. But as Gaul gradually came under the dominion of the Romans, the Greek divine emblems disappear, and the head of a Roman emperor takes their place, while the Greek are replaced by Roman letters as NEM. COL. (colony of Nismes), or by IMP. CAESAR, etc. The Greek coinage lasted from about 500 B.C. to 50 B.C., after which the Roman coinage prevailed until that power was eventually superseded by Clovis and his Franks about A.D. 500.

MEROVINGIAN DYNASTY, 500 TO 741 A.D.

The early Frankish dynasty, founded by Clovis under the title of the “Merovingian Kings,” continued for about two hundred and fifty years, and their coinage has many interesting characteristics. It is distinguished by being almost entirely golden,* even in that semi-barbarous period, and in almost every instance the obverse is stamped with the *bust of the sovereign*, whose name is generally indicated by Roman letters encircling it, but it *never contains the title of King*. The characterising kingly feature present upon many

* The probable explanation of this almost exclusively golden money, is that the Merovingians immediately followed the Romans, who left abundant *silver* and *bronze* money, and a moderate amount of *gold* was, therefore, all that was required in addition. But during the 250 years of the Merovingian Dynasty the country had become impoverished by continual warfare and diminished trade, and by the time of Charlemagne (800) it could no longer support a golden currency, and silver was exclusively used until the time of Louis IX (1226), who again introduced a golden coinage.

of the coins is the long curling hair hanging down the neck, which gave to the kings of this dynasty the name of "Rois



SIGVCIOFI.

Chevelures," or the "long haired kings," the privilege of wearing the hair long being at that time limited to the royal race.

CARLOVINGIAN DYNASTY, 741-987 A.D.

The Merovingian dynasty terminated in 741 by the accession of Pepin, the founder of the Carlovingian race, and the coinage then underwent a remarkable change. Gold almost entirely disappeared, and was succeeded by a silver coinage; and while nearly every Merovingian coin exhibited the bust of the king, scarcely one of the Carlovingian coins has such an effigy upon it.

The king's head is replaced by a cross of such dimensions as to be the most striking feature, and the name of the king is given in strongly defined and easily legible Roman letters, or in monograms of a curious and complicated character which were almost universal favourites, of which the following example is a good illustration.



For explanation see p. 308.

These changes in the features of the coinage are eminently characteristic of Charlemagne himself, for in addition to, and in the midst of his unceasing wars, he was devoted to the spread of the Christian faith, and to the pro-

motion of education and mental culture. He is described as having an unusually fine personal appearance, but as being indifferent about his dress and outward adornments. His first important war after his accession was undertaken against the Pagan Saxons, not only for the purpose of subduing them, but also of compelling them to adopt Christianity. He surrounded himself with learned men, and established various seats of education, and his biographer Eginhart relates that he made persevering endeavours to learn to write, though with very limited success.

It is interesting to observe how each of these features of his character is impressed upon his coinage. His Father, Pepin "the Little" (*le Bref*), who had nothing to be proud of in his personal appearance, was a warrior pure and simple, and his coinage reflected his character. It is extremely scarce, and is of the rudest description, bearing upon its face



no effigy, but simply R.P., Rex Pepinus—*King Pepin*. His prowess and dominions, so well known at the time, were his sufficient monument. Charlemagne, like his father, impressed his individuality upon his coinage. His absence of personal vanity and indifference about outward adornment finds its expression in the absence of his effigy on his coins.* His zeal for the spread of Christianity, such as he and his times knew it, is shown by the cross and other Christian emblems which are such a marked feature of the coinage of his dynasty, and his persevering but ineffectual endeavours to master continuous writing, probably originated the monogram as his form of signature, K.R.L.S., "Charles—

* There is no known French coin bearing Charlemagne's effigy, but there are a few *extremely rare* Italian ones which have it.

his mark," which the art and literature he so encouraged gradually rendered more and more elaborate, until some of these monograms are indeed complicated artistic designs.

After having thus, according to his lights, advanced religion, softened the roughness and lawlessness of his time by combining into one law-pervading kingdom so many contending people and elements, promoted art and learning to the utmost of his power, and stamped his character upon the coinage for nearly five hundred years to come, this great monarch closed his life with the words "*In manus tuas commendo spiritum meum*" (*Into thy hands I commend my spirit*), leaving a noble example that may be followed with advantage in many respects even in these more "enlightened" days of which we are so wont to make our boast.

In nearly every instance this dynasty inscribed Rex upon the coins, and CARLVS REX + on one of Charlemagne's coins is merely the representation of all that succeeded him. In addition, however, to the prominent Christian symbol of the cross, we meet very early in this dynasty with the letters D. N. Rex, Domini Nomine Rex, In the name of the Lord, king; and a little later on we meet with D. G., or more fully still, with Gratia Di Rex on the coins of Charles the Bold, A.D. 863—an ascription of the throne to Divine Providence which thus appears on the French coinage five hundred years before this religious expression is to be found on the English money. One form of this ascription occurs in the French coinage of this period which is never present on the English coins. The mediæval period of French history was far more turbulent, and the reign of the kings, even after their accession, was cut short much more frequently than in our own history, and of the many troubled periods of*

* It was not until the reign of Edward III, 1340, that D.G. was placed on the English coins.

the time, that of Louis le Begue, or the Stammerer, A.D. 877, was one of the most troubled.



Monogram



explained.

LOV(U)IS.

The inscription on his coinage is MISERICORDIA D'I REX, *King by the Mercy or Pity of God*, which sounds sadly in accordance with his troubled accession to the throne. His reign was short, only two years, and more than usually troubled, even in those stormy times, for before he occupied the throne of France he had lost Italy, Lorraine, Brittany, and Gascony, which had belonged to his father, and he was obliged, apparently in an exceptionally marked manner, to acknowledge before the prelates and nobles of France that he only held the throne by election:—"I, Louis, appointed king by the mercy of the Lord our God, and by the election of the people, do promise the people that I will keep the laws and statutes" (Michelet's *History of France*, vol. i, p. 102), and in accordance with this declaration he inscribed upon his coinage, "King by the Mercy of God," not like his forefathers as being unquestionably king "by the Grace of God."

THE CAPETAN DYNASTY, 987-1848.

The Carolingian dynasty terminated A.D. 987, by the accession of Hugh Capêt, but the change of dynasty is marked by no immediate striking change in the coinage. Scarcely one of the Carolingian kings placed his effigy on his coins, and Hugh Capêt himself did not stamp either his name or his face upon his; and his successors for about a hundred and twenty years simply recorded their names, and

retained the emblem of the Cross, as in the previous dynasty.*

At this date the English coinage differs materially from the French in the title ascribed to the king. The Saxon kings, without exception, styled themselves Anglorum Rex—King of the Angles—the people—not Angliæ Rex, King of England; and William the Conqueror, although conqueror in the fullest sense, and thereby the Feudal monarch of the country, still adopted the title of Anglorum Rex, perhaps to humour the people by retaining the title to which they had been accustomed in their Saxon kings. None, however, of his successors followed his example, and Angliæ Rex—King of England—has been the unchanging title ever since. But in France, although the Feudal system was even more rigorously imposed than in England, even Louis XI styled himself only Francorum Rex, and Francis I, one of the most brilliant and noted of the French Sovereigns, still only assumed the title of Francorum Rex, which continued upon the coinage until the time of Henry IV of Navarre. He was Lord of Bearn and King of Navarre by inheritance and when he came to the throne of France, although his title was partly hereditary and partly elective, it was still in some degree due to conquest; yet even he inscribed upon his coinage Francorum et Navarræ Rex—King of the French people, and of the country of Navarre.

So the title continued until the reign of Louis XIV, who styled himself upon his 5-sol. piece, in 1705, “Ludovicus Magnus Rex,” *Louis*, “*the great king*,” which title he was,

* Louis IX, Saint Louis (1226–1270) introduced a gold coinage into France for the first time for about five hundred years, and Louis XI (1498–1515) placed his effigy upon his coins, an emblem of royalty which had been absent from the French coinage for nearly seven hundred years. The coins were therefore called “testons” (from *teste*, *tête*, head). Henry VII of England, about the same time, placed his *portraits* upon his coins, but there had been a conventional king’s head upon all the English coinage from the time of the Saxons, long before the Norman Conquest.

however, apparently willing to fortify by the addition on the reverse of "Domine adjuva nos," and in 1710 he inscribed upon his 6-denier piece "Roy de France et de Nav.," this being the first time in which the kingship of the *country* was claimed by a French monarch, and then apparently upon his own authority alone. But who would venture to dispute with "the great king" any claim that he chose to make? And so the title became established.

Louis XV made no changes except the number XV for XIV, and Louis XVI adopted the coinage of his predecessors without alteration until 1789. But in that year he became practically the prisoner of the National Convention, which dictated a new coinage with the *title* changed in a significant manner. Although his name and effigy still remained, "By the Grace of God," as his title to the throne, was removed,* and he was reduced from the rank of "Rex Franciæ" to that of "Roi des Francois," and subsequent events, both in France and elsewhere, show how much importance was attached to the change. It was accompanied by the further change of legend around the edge of the coins from "God save the King" to "the Nation, Law, and the King." When Napoleon came to the Imperial power, he never described himself as "Empereur de la France," but only as "Napoléon, Empereur," nor did he ever claim on his coins to be Emperor D.G., or "by the grace of God." His nephew, however, in one single instance, viz., in a 5-franc pattern coinage in 1853, as soon as possible after his elevation to the position of Emperor, did lay claim to this title derived

* It will be in the recollection of some persons still living that the omission of the letters D.G. from the first florin of Queen Victoria, nicknamed in consequence "the Godless florin," produced such a storm of indignation against the ministry of the day which had issued it, as seriously impaired its credit with the nation, and contributed not a little to its downfall, which occurred shortly afterwards.—See Paper on "Some Curiosities of English Coinage," *Proceed. Liverpool Lit. and Phil. Soc.*, 1887-8, pp. 333, 334.

from God (for he always appeared to consider himself the child of Destiny in a peculiar degree), and upon this 5-franc piece was inscribed "Napoleon III, par la grace de Dieu et la Volonté Nationale, Empereur des Francais," but the coin was never issued as currency, and the inscription has therefore no official authority.

Both Napoleons did adopt one of the strictly monarchical forms of title, for while both of them placed their family name of Bonaparte upon their first coinages, viz., "Bonaparte, Premier Consul," 1799, and "Louis Napoleon Bonaparte" while simply President of the French Republic in 1852, they both discarded the surname on becoming Emperor, and by adopting only the Christian name, "Napoleon, Empereur," and "Napoleon III, Empereur," endeavoured so far to associate themselves with the order of kings as to imitate in this respect the Louis-s, and Henrys, and Philips of France, and the Williams, and Edwards, and Georges of England, etc.

On Napoleon's final deposition in 1815, and the restoration of the old Bourbon dynasty, Louis XVIII immediately restored the title of Roi de France, and Charles X, also a Bourbon, who succeeded him retained the title. But when he lost the throne in the revolution of 1830, Louis Philippe, an Orleanist, was elected to succeed him, and his title was again limited to Roi des Francais. Louis Napoleon, in the period of his Empire in 1853, was "Napoleon III, Empereur des Francais," but in his later issues he dropped the "des Francais" and styled himself simply "Napoleon III, Empereur."

To Englishmen, accustomed to the unchallenged title of King of England throughout the whole period of about eight hundred years since the Norman Conquest, the difference between the two titles does not, at first sight, appear very important, but the controversy connected with the

title of "Deutscher Kaiser," "*German Emperor*," not "Emperor of Germany," bestowed upon the late Kaiser William, shows that the difference was held to be one of important principle, not only in France, but in Germany also. The Russian title of "Emperor of all the Russias," is in accordance with the difference in national thought respecting the Czar of *Russia* and the *German Kaiser*, who has never either possessed or claimed the despotic authority of the Muscovite rulers. The title "Emperor of Germany" is not unfrequently employed, not only in popular conversation, but even in newspapers and works of leading rank,* but it has never been possessed by even the greatest of the German emperors, and Charles the Fifth, who takes rank as one of the greatest, if not the greatest of their emperors since the time of Charlemagne, was never styled Emperor of Germany upon his coinage. On one of them he is inscribed—Carolus V Romanorum Imperator Semper Augustus—and in another, in abbreviated form, Carolus D. G. Rom. Imp. Hisp. Rex—Dux. Burg. Z (et) Brab. But the title *German Emperor*, not *Germaniæ Imperator*, Emperor of Germany, is unmistakably shown in a thaler of 1546, which is inscribed "Victoria Invictiss : CAROLI V Imperatoris Germanici Semper Aug :

Whilst the position of German Emperor was still regarded as belonging by hereditary right to the Hapsburg dynasty, the title of the reigning monarch was "Emperor of the Romans—always Augustus," but never Emperor of Germany. On the coinage of 1783 is inscribed Josephus II,

* By an Article of the Imperial Constitution "The King of Prussia shall *ex-officio* be President of the Confederation, and bear the title of German Emperor" (Deutscher Kaiser). This title was adopted to meet the hereditary rights of the other German Sovereigns. The King of Prussia was invested by his Brother Kings with certain executive functions, and especially with the command of all the German forces, not as their superior, but as *primus inter pares*, and his title, as inscribed upon his first coinage as Emperor, in 1870 is "Wilhelm—Deutscher Kaiser—König von Proussen." William—German Emperor—King of Prussia.

D.G.R.I.S.A. Germ. Hung. Bo. Rex.—Arch. Austriæ, D. Burg. Loth., M.D., Hct. 1783—which means “Joseph II,” D.G. Romanorum Imperator Semper Augustus,—Germaniæ, Hungariæ, Bohemiæ, Rex.—Archdux Austriæ—Dux Burgundiæ—Lotharingiæ (Lorraine) Magnus Dux Hereditarius. (*Rex* but not *Imperator* Germaniæ.)

BRAZIL.

There is no more singular form of an Emperor's title than that of the Emperor of Brazil. PETRUS II., D.G., CONST. IMP. ET PERP. BRAS. DEF. (*Peter II., D.G., Constitutional Emperor and Perpetual Defender of Brazil*), and its history is interesting.

Terrified by the invasion of Portugal by Napoleon in 1807, Dom John VI, “Lord of Brazil” (*Dominus Brasilæ*), who was at that time Regent of Portugal in consequence of the queen's mental imbecility, left Lisbon in an English man-of-war, and sailed to Brazil for safety. He was warmly welcomed there, and in 1815 promulgated a decree changing the title from “*Dominus*” to “*Rex Brasilæ*.” His mother died the following year, and he became “*Rex Portugallæ Algarbiæ et Brasilæ*.” But his subsequent conduct alienated the Brazilians, and Napoleon being no longer a power, he returned to Lisbon in 1821, leaving his son, Dom Pedro, as Viceroy in Brazil.

It soon became evident that Brazil would no longer remain a mere dependency of Portugal, and Pedro was urged on all hands—by the Provincial Governments and by the soldiery—to head the movement for independence, and allow himself to be proclaimed sovereign. He decided at last (apparently with the approbation of his father from Lisbon) to assume the headship himself, which he did on the 7th September, 1822, the Town Council of the capital having already declared him “Defender of the Empire” during his

absence in another part of the country. On the 24th March, 1824, he took the oath to the Constitution, and on the 29th of August, 1825, he was acknowledged by Portugal as "Pedro I, Emperor of Brazil," and the independence of the country was complete.

His affection for the country, and his realization of the requirements of the times, induced him, *proprio motu*, to propose a Constitution which was framed with singular wisdom, and has resulted in almost unexampled tranquillity and prosperity in that country. In the selection of the title of "Emperor" of Brazil instead of "King," he was influenced by the magnitude of the country over which he would rule. Europe is estimated to contain about three million square miles, and Brazil contains about two millions and a half. It seemed, therefore, that the title of "kingdom" was inapplicable to such an extent of country, and that "empire" was the only appropriate designation. Dom Pedro therefore became "Emperor," and as he had himself proposed the Constitution, he became "Constitutional Emperor." The title already bestowed by the Capital of "Defender of the Empire" was retained; and as by the Constitution the throne was made hereditary, he became "Perpetual Defender," on the ancient principle that—"The king is dead, long live the king."

Thus this remarkable title grew up, and long may the Empire of Brazil flourish under such wise rule as that of the present monarch—Petrus II. D.G. Const. Imp. et Perp. Bras. Def.

But to return to the changes in the French coinage during the lifetime of Louis XVI. Not only was his title changed by the Convention, but the monarchical emblem of the *Fleur-de-Lys*, surmounted by the crown, was removed, and also the encircling legend *Benedictum Sit Nomen Domini*. Both of these had been present without interrup-

tion upon the French coinage from the time of Saint Louis (Louis IX A.D. 1226), and so pre-eminently high did the *Fleur-de-Lys* stand in the monarchical estimation, that Louis XIV inscribed upon one of his coins (a Lit d'argent) the legend to surround the flowers "Domine Elegisti Liliū Tibi," (*O Lord thou hast chosen the lily for thyself*). Napoleon made no claim to be a descendant of the past kingly race or a representative of the kingly traditions, and the *Fleur-de-Lys* never appears on his coinage, but it was again assumed on the accession of Louis XVIII, and by his successor Charles X. When, however, Louis Philippe became king by election, the national sentiment would no longer sanction its retention, and the *Fleur-de-Lys* finally disappeared from the French coinage, after having held its place there for above 550 years.

Not only, however, was the royal emblem removed from the coinage before the execution of Louis XVI, but it was replaced by a revolutionary emblem of a most pronounced character. A winged figure—to symbolize it is hard to say what principle or belief still entertained at that time—is introduced inscribing upon a large tablet the word "Constitution," encircled by the legend "Regne de Loi." In another coin "Les hommes sont Egaux devant la Loi" is the inscription upon the tablet, and "Liberté—Egalité" is inscribed above it. In the year of the king's execution a new coin was issued, upon the obverse of which is inscribed "Republique Francaise" and the reverse has a pair of balanced scales with the same motto, indicative of this new principle in French national life, "Liberté—Egalité," and the Gallic Cock also is introduced for the first time upon the coinage.*

* "The Cock was introduced on the assumption, since then disputed, that it was the symbol of the ancient Gauls, who, however, are never recorded as having carried it on their banners, but the most positive documents tend to establish that it was the Franks—thirteen centuries after-

But now (1793) the king is dead, and the Revolutionary Republic is symbolized for the first time upon some of the money by a figure of Minerva crowned, if we may so express



it, with the Cap of Liberty. The inscription is "Republique Francaise," and upon the obverse of the large silver coins then issued was placed another of the emblematical designs of Dupre's,* consisting of three figures grouped together—one female figure indicating Liberty by her Cap of Liberty; another female figure indicating "Equality" by the equilateral triangle in her hand; and both sustained by the emblem of "Strength," in the form of Hercules, between them, clothed with his Nemæan lion's skin.

The origin of the Cap of Liberty is ancient and interesting. We have no information as to the material of which the so-called hats worn by Shadrach and his princely companions in Babylon were made, but about that time the art of making felt was known among the nations around the Mediterranean, and it was employed so habitually for making head-coverings in Phrygia, in which Troy was situated, that the name "Phrygian Cap" (or "Pileus" as it was afterwards called by the Romans) has become permanently associated
wards,—who originated the Gallic Cock."—Barthelemy, *Nouveau Man. Numis., du Moyen Age*, p. 68. When Napoleon changed "Republique Francaise" into "Empire Francais" on the 5-franc piece, he removed the Cock as well as the name of "Republic," but it has appeared again upon the Republican gold 20-franc piece of 1887, so that it is evidently still in favour as a Republican emblem rather than the Imperial Eagle which Napoleon III introduced upon his coinage.

* Dupré was an eminent designer and medallist at that time.

with them. There are numerous ancient sculptures in which these caps are represented of various shapes. Some were closely fitting skull caps, but others are of a conical form, almost identical with the conical caps worn by the clowns at a circus. The felt was so soft that the cap did not retain its conical figure when upon the head, but the summit generally fell forward. In those days slaves were not provided with any such luxury as a head-covering, and it was the custom among the Romans, when about to free a slave, to shave his head, and then place upon it the ordinary cap of the period, which was this "Phrygian cap." It thus became so completely the badge of freedom that the phrase "*servos ad pileum vocare*" to call the slaves to the *Pileus* (or cap) was in common use as meaning to call the slaves to take up arms when wanted, the promise of future liberty as the reward being conveyed in the allusion to the cap. About the time of the Revolution the French ran wild in favour of classical or Roman costumes and manners, and the caricatures of the day exhibit French men and matrons wearing the toga and other garments permitted by the fashion, but which would scarcely have passed muster as decent or respectable at another time. At that period it was that the Revolution broke out, and the Roman *Pileus*—the Phrygian cap—was very naturally adopted as the emblem of the coming freedom under the name of the Cap of Liberty.

Soon, however, after the death of the king, France was beset by enemies on every side, while it was also torn by internal dissension, and now the "Directory" Government issued a new 5-franc piece, bearing the inscription "*Union et Force*" (*Union and Strength*), as a call to the nation to lay aside its differences whatever they were, old remaining monarchical principles or increasing revolutionary divergencies, and to unite to drive back the enemies of the nation. To this call the nation responded—the man arose who was

to carry out the national desires—and the next coinage shows the face of Napoleon, surrounded by the inscription “Napoleon Bonaparte—Premier Consul” on the obverse; with “Republique Francaise” on the reverse. Events, however, marched very rapidly, and we next find the title “Napoleon Empereur” on the face of the coin. But the Republican sentiment was not yet dead in the nation, and “Napoleon Empereur” on the obverse is associated with the strange accompaniment of “Republique Francaise” on the reverse. This companionship, however, did not last long, and in the succeeding coinage “Napoleon Empereur” and “Empire Francais” form the natural complement one of the other.

On the fall of Napoleon, Louis XVIII, as already mentioned, restored the title “King of France,” and the other monarchical characteristics upon the coinage. And the next change in the coinage came with the Revolution of 1830, when Louis Philippe was elected King of the *French*—Roi des Francais,—and the *Fleur-de-Lys* was again expunged. He reigned until 1848, when France again became a Republic. During its short republican life—from 1848 to 1851—“Republique Francaise,”—the name of the money value of the coin—and “Louis Napoleon Bonaparte—President” were the only noticeable features of the coinage, except one which is striking as an artistic design, as well as an indication of the change in national feeling from the severity of the first Revolution to the luxury and display of the one under notice. Dupre’s old emblematic representation of the Republic as a grave and dignified Minerva, crowned with the cap of Liberty, was replaced by a new head, of which Oudine was the designer. The emblem of Liberty—the cap—has totally disappeared,* and a female head, the characteristics of

* By an Act of the French Legislature, this emblem was condemned and forbidden. Barthelémy, *Nou. Man. Numis.*, p. 68.

which are beautiful and sensuous rather than classically severe, has superseded the Minerva. The original of the new symbolical representation of the Republic was said to be a popular *prima donna* of the period, and it is difficult from the characteristics of the head and face not to believe that this story is the true one.*

Since the fall of Napoleon in 1870, there have been no changes beyond the substitution again of "*Republique Française*" for "*Empire Français*," and of the head of this new Republican symbol for that of Louis Napoleon, thus indicating the termination of the Napoleonic dynasty. The coinage since 1870 has been devoid of all interest except the retention of the legend "*Dieu protège la France*" around the edge, and such as may be connected with it simply as a commercial medium of exchange.

THE LEGENDS ON THE FRENCH COINAGE.

One portion of the French coinage which bears in an especial degree upon the subject of this Paper, as "*illustrating the changes of dynasty, or of religious or national sentiment in France*," consists of the Legends, when that term is employed in the sense of an inscription, conveying some sentiment. The very early presence of the religious expressions, *Domini Nomine*, *Gratia Dei*, or *Misericordia Dei Rex*, has been already dwelt upon, but with the accession of Saint Louis (Louis IX, A.D. 1226) a new feature appears in the coinage by the introduction of lengthy legends of a deeply religious character, some of which continued upon the coinage for above five hundred

* The Britannia upon the English copper money is a faithful copy of the copper coin issued by Antoninus Pius, when Roman commander in Britain, except that the goddess Minerva is the Britannia in his coin, and it is said that Lady Frances Stuart, a noted beauty at the time of Charles II, by whom the copper coinage of England was first issued, was the original from whom Charles's Britannia was designed.

years, until the Revolution swept them away along with so many other of the old national landmarks. "BENEDICTUM SIT NOMEN DOMINI NOSTRI DEI IHV XPI," "*Blessed be the name of the Lord our God, Jesus Christ,*" was introduced by Saint Louis, and retained its place, in a more or less abbreviated form, to the era of Louis XVI, in 1785, a period of above five hundred and sixty years. "XPC (CHRISTUS) VINCIT, XPC REGNAT, XPC IMPERAT," "*Christ conquers, Christ reigns, Christ commands,*" was another of his legends* which also remained until the time of Louis XVI, and both were adopted by our own Edward III, and by the Black Prince, when coining money as sovereigns of Aquitaine. The third of his legends, "AGNUS DEI QUI TOLLIS PECCATA MUNDI MISERERE NOBIS," "*O Lamb of God, which takest away the sins of the world, have mercy upon us,*" was also adopted by Edward III, in 1346, in his Aquitaine coinage, and by the Black Prince; but beyond that date it does not appear in the French or Anglo-French coinage.

These legends, originated upon the French coinage by Saint Louis, are very naturally associated with his character and his history. He was of an eminently religious disposition, and having made a vow to go on a crusade if he should recover from a dangerous illness, he left France for the Holy Land when about twenty-two years of age. Full of reverence, and hopeful as to the future of his pious expedition, he inscribed on his coinage, "Benedictum sit nomen Domini," etc., and, in accordance with all that we know of his character, he ascribed his anticipated victories to Divine help, and placed upon other of his coins "Christ conquers—Christ reigns—Christ commands." But disappointment and sorrow dogged his steps. His nobles were

* This legend was first adopted, not as a legend but as a battle cry, by the soldiers of Philippe Augustus, Louis's grandfather, in a battle against the Saracens, in 1190.

licentious and disobedient; sickness thinned his troops and prostrated himself; the Turks gained the advantage and took him prisoner; and after six years he returned to France unsuccessful and disappointed. What more natural memento to be inscribed upon his coins by such a man, after such trials, than “*Agnus Dei—miserere nobis*” (*O Lamb of God—have mercy upon us.*)

The next legend that I have been able to discover does not occur until after the long interval of above two hundred and fifty years, when Louis XII, surnamed “*the father of his people*,” “*LE PERE DU PEUPLE*” (1498–1515), introduced the new inscription, “*DEUS IN ADJUTOREM MEUM INTENDE*,”* “*O God, hasten to my help*,” which was repeated by his son, Francis I in a single coinage, and then disappeared.

It is again interesting to trace the connection between this legend, new to the French coinage, and the circumstances of the king's accession to the throne. He had been brought up as a youth having some prospect of succession to the throne by his jealous and suspicious uncle, Louis XI, in a galling condition of espionage and subjection, and he had also been looked upon with disfavour by Charles VIII, who succeeded Louis. France was barely recovering from the wars which had ended in the expulsion of the English by Joan of Arc, and Louis's earnest desire was to promote the happiness of his people. He had seen the condition of the country under the oppressive rule of Louis XI, and under the loveable but feeble character of Charles VIII, and his prayer for help inscribed upon his coinage after his accession “*Deus in adiutorem meum intende*” (*O God make haste to help me*), expressed the heartfelt desire of the king, who in response to it earned for himself the title of “*Le Père du Peuple*,” by which he is still commemorated in French history.

* Ps. lxx. Vulgate heading.

Francis I introduced another legend, which would not at first sight be looked for from a king of the character usually ascribed to him: "NON NOBIS DOMINE SED NOMINI TUO DA GLORIAM," "*Not unto us, O Lord, but to Thy Name give the glory.*" Under what special circumstances this ascription of praise to the Almighty was called forth I have not been able to discover, but it was not repeated upon his subsequent coinage, nor upon that of any of his successors.

Henry II, in 1552, inscribed "Dum totum compleat orbem," *Until he may (or can) complete the whole circuit (or world).* The employment of the word "orbem" (world or globe) introduces a difficulty in explaining this legend, for Henry II was not a colonising king, nor were his victories on a world-wide scale. But in 1552 he gained possession of Lorraine and of Metz, Toulon, and Verdun, and had then only to regain Calais for France, and the whole of France, as then understood, would have come under the power of the king, whose "circuit" of the kingdom would be complete. For this end he had to wait six years, until, in 1558, he recovered Calais, and then all foreign possessors of French territory had been expelled or overcome, and the "circuit," *orbs*, was complete.

The coinage of Francis II, who reigned only a single year, has an interest for Scotchmen and Englishmen in the record that it contains of his marriage with the beautiful and unhappy Mary Queen of Scots, which is commemorated in two of the legends upon his coins, the first being "FECIT UTRAQUE UNUM," *He made them both one*; and the second, "FRANCIS AND MARY," "*JAM NON SUNT DUO SED UNA CARO,*" *They are now not two but one flesh.*

The next legend is upon a pattern demi-teston of 1573, of Charles IX, of St. Bartholomew massacre memory, which however was never issued as currency. He inscribed upon

it "*VERÆ RELIGIONIS ASSERTORI*," *To the assertor of the true religion*. This we may pass by without further notice, and turn from it to the inscription on a pattern franc of 1577, of Henry III, who was king of Poland before he became king of France. "*PACI, QUIETI AC FELICITATI PUBLICÆ*," *To Peace, Tranquility and Public Happiness*—an aspiration unhappily very far from being fulfilled, for his reign was a series of civil and religious conflicts and of disastrous foreign wars, and his own life was terminated by the hand of an assassin.

With the accession of Henry IV, of Navarre, we meet with an inscription new to the French coinage, "*GRATIA DEI SUM ID QUOD SUM*," *By the Grace of God I am what I am*, and we may well believe that this legend expressed the true sentiment of the king when he looked back upon his early orphanage, upon the temptations to a corrupt life placed purposely in his way in order to ruin him when invited to the Court of France by Catharine de Medicis, upon the dangers he had encountered arising from his being a Huguenot, and upon the armed forces of the League which he had to vanquish before he became finally King of the French and of Navarre; and it is not without interest to compare his motto on his accession to the throne under such circumstances, "*By the Grace of God I am what I am*," with that of our own Queen Mary, in her first coinage on her accession to the throne on the death of Edward VI, when she also, looking back upon her own past life, recorded her feelings in the inscription, "*A DOMINO FACTUM EST ISTUD, ET MIRABILE EST IN OCULIS NOSTRIS*," *This is the Lord's doing and it is marvellous in our eyes*.* Henry IV's motto was followed in a single instance afterwards by Louis XIV, in 1650, during his *minority*, but when he had had a short experience of reigning he changed it for "*Ludovicus Magnus*

* See "*Curiosities of English Coinage*," *Proc. Liverpool Lit. and Phil. Soc.*, 1887-8, pp. 317, 318.

Rex," and it would seem that this was his real view of himself, which he simply emphasised in his famous mot, "L'Etat c'est moi."

From this date the changes indicative of sentiment in the legends upon the French coinage have been already dwelt upon, but they may be briefly summarised to complete the subject. At the beginning of the Revolution the king's title was lowered, and "Blessed be the name of the Lord" was removed, to be replaced by the revolutionary principle, "Reign of Law." This was soon superseded by "Liberty and Equality," and this again quickly disappeared before "Union and Strength" when the nation became surrounded by enemies. The regime which was to exhibit these two features, "Unity and Strength" in their perfection removed the words, but substituted the reality in the Napoleonic empire, until he fell. The Bourbon Restoration brought back for fifteen years the kingly inscriptions and the ancient legend of St. Louis, but their expulsion ushered in the Orleanist with his enfeebled monarchical title, to be succeeded again in a few years by "Republique Francaise," which again in a short four years was replaced the second time by "Empire Francais," which in less than twenty years again gave place, for the fourth time, to the "Republique Francaise," which still characterises the French coinage.

NATIONAL CHANGES OF SENTIMENT INDICATED BY THE INSCRIPTIONS AROUND THE EDGE OF THE COINS.

The first time that any inscription was placed in that part of a French current coin was at the beginning of Louis XIV's reign, who placed upon his Ecu, in 1685, "Domine Salvum fac Regem Christianissimum" (*God make the most Christian king safe*), but the superlative was omitted in the next coinage, 1690, and "Domine

Salvum fac Regem” only was continued throughout his reign and that of Louis XV and Louis XVI, until 1789. In that year—the first of the Revolution—the National Assembly became substantially the ruling power, and, although Louis still remained upon the throne, and continued nominally to be king, he was practically a prisoner in the power of the Assembly, which issued a new Ecu, in 1792, with the following significant alteration in this inscription, “La Nation, La Loi, et Le Roi.” It is no longer “God make the king safe,” but “The Nation, Law, and the King.” The king’s title is still retained, but he takes the last place instead of the only one. “The Nation” takes precedence of all. “Law,” as the ruling spirit, comes next, and “the King” comes last, instead of being the first of all as heretofore.

In January, 1793, the king was beheaded, and the Convention then issued a new coin of “six livres” instead of “a crown.” The king, of course, disappears from the inscription around the *edge*, which expresses the new Revolutionary principles instead, and “Liberté, Egalité,” is now the legend, while “Law” is removed to a more prominent position on the obverse of the coin. It will be noticed in examining this inscription that “Fraternité” is not there, nor is it upon any coins of the first Revolution. The thoughts of the nation at that period appear to have been so fully occupied by the new idea of “Liberty”—of release from feudal bondage, from the despotic power of the monarchy, and from thralldom under the privileged classes—and with the first realization of the further idea of the equality of men as men, that these two conceptions were all they thought of commemorating upon the coinage. These grand principles, practically so new to the nation, were stamped in various other forms upon the money, but it was not until a much later period that the conception of “fraternity” in addi-

tion had so far become impressed upon the French national mind as to be embodied in the now universally familiar legend "Liberté, Egalité, Fraternité," which was first adopted at the Revolution of 1848, but has now become so familiar that we are apt to fancy that it was the national creed from the time of the first Revolution. At that date, however, France was torn to such an extent by civil dissensions that the idea of Brotherhood in France itself can scarcely have existed, and certainly not in any marked degree; while the idea of Brotherhood with other nations was impossible, for her hand was against every one, and every surrounding nation's hand was against her. But during the period which passed under the Empire of Napoleon every Frenchman became a brother with his fellow-soldiers, and every Frenchwoman a sister with her neighbours in the sorrows resulting from war. In the succeeding years, under the restored monarchy, the ideas connected with trades' unionism were spreading rapidly, both in this country and in France; and later still, the teachings of Louis Blanc, and others, familiarised Europe with the idea of Universal Brotherhood.

In the third Revolution therefore of 1848 "Fraternity" was embodied as part of the Frenchman's creed, along with "Liberty and Equality," and the three have now been so long before our eyes in public inscriptions of every kind that we often forget that "Fraternité" was not always there.

But to return to the changes in the first Revolution—old things were rapidly supplanted by new ones in every direction. The "crown" (Ecu) and the livre soon disappeared, and the totally new five-franc piece took their place, and in "1'An 8" (1799) the Executive Consular Commission proclaimed itself instead of the king, as being the guarantee for the value of this new coin, by the words, "Garantie Nationale," around the *edge* in place of "Liberty,"

"Equality," and "Law," which disappear, as the king had previously done. But very soon after this a remarkable change makes its appearance in an apparent return to former lines of thought and of national religious feeling.

The revolutionary government had not only destroyed the monarchy, but so far as lay in its power it had also destroyed religion in the country. The clergy had been expelled from the country or removed from their churches, and the property of the church in France had been seized by the government. But these violent courses had alienated the feelings of those who cherished religious sentiment, and they were still numerous and strong in the country, even if they could not make their voices heard in Paris and the great cities which were the centres of the revolutionary spirit.

When, then, Napoleon became first consul in 1799, and had to take thought for the entire nation, which was beset with enemies from without and had need of its utmost united strength, he saw the dangerous element of weakness arising from the alienation of the religious sentiment of the people, and he took early steps to remove it by entering into negotiation with the Pope (Pius VII), and he engaged to make payments to the clergy from the state funds and to restore them to their churches. The Pope in return promised him his assistance, and three years after concluding the Concordat of 1801, crowned him Emperor of France in 1804 (l'An 12). In the early part of that year Napoleon, previous to his coronation, and while still Premier Consul, whether influenced solely by policy or by some real religious sentiment, issued a new 5-franc piece, and placed upon its *edge*, in lieu of any of the monarchical or revolutionary mottoes, the totally new inscription "Dieu protège la France," which remained there through all his coinages to the close of his power.

With his first fall, and his banishment to Elba in 1814,

the old monarchy returned to France for a few months, but there is no coinage recording it.

At Napoleon's final downfall, in 1815, Louis XVIII returned to occupy the throne, and so far as the coinage was concerned he removed every sign of the revolutionary, constitutional, or Napoleonic period, and immediately replaced all the old monarchical characteristics, both in his own title, in the monarchical designs upon the obverse and the reverse of the money, and also in the restoration upon the *edge* of the old motto, "Domine salvum fac Regem. All these Bourbon characteristics continued unchanged throughout his reign and that of his brother, Charles X, who succeeded him, until the second revolution of 1830, when Charles was obliged to escape for his life, and that branch of the Bourbon dynasty came to an end.

His cousin, Louis Philippe, was then elected to the throne, but this time under very different national conditions from those which existed when Louis XVIII was recalled by the Senate on the fall of Napoleon. Louis Philippe had not only to swear to the Constitution, but to prove his *bona fides* in many ways, and his coinage bears not a few proofs of the pressure put upon him. He was no longer permitted to inscribe himself "King of *France*" upon the face of his coins, nor to retain the ancient monarchical *fleur-de-lys* upon the reverse, while the Bourbon inscription of "Domine salvum fac Regem" was again removed from the *edge* of the coin, and the national—what? prayer? hope? belief? assurance?—"God protects France," was again substituted for "God save the King." Throughout the subsequent changes through which France has passed since the Revolution of 1848, when Louis Philippe was expelled; through the Republican Presidentship of Louis Napoleon; through the *Coup-d'état* and his period of empire; through the military and social glories

of the beginning and greater portion of his reign, and through the disasters which terminated it; and so far through the Republic which succeeded it, "God protects France" has still found its place upon the 5-franc coinage of that nation. But the country has passed for the last twenty years through many sore trials. Its political and religious storms and controversies have been legion, and lately every effort that a ministry in modern times could make to displace religion from a country was made by M. Bert, late Minister of Public Instruction, though without success, for "Dieu protège la France" still holds its place upon the edge of the 20-franc gold coinage (the large silver coin not having been issued for several years),—and that the legend may remain true for ever will be the heartfelt desire, not only of the French themselves who have so steadily adopted it, but of everyone who can appreciate the noble qualities of a people who have raised their country from such a condition as that in which the Franks first found it, to the position it has so long occupied both in Art and Science, and in those graceful qualities which have long made France a centre of attraction, and the admiration of the civilised world.

The changes now passed in review, some of them being of stupendous importance, have taken place within a period of a hundred years, and the French coinage faithfully records them for future historians or moralists; while our own (English) coinage does not record a single circumstance during the last nearly two hundred and fifty years (since the Protectorate), beyond the succession of one sovereign after another, from the time of Charles II to the Jubilee of our gracious Queen. The future historian will search in vain in the British coinage for any indication of national events, or of religious sentiment, either in the sovereign or the nation, with the solitary exception of the insertion of F.D. in the

coinage of George I,* and the dropping of the title of King of France in the last coinage of George III; but whether it might not yet be possible to have some record of interest relating to the Queen's reign is a point upon which those in high places must be left to decide.

What changes of dynasty or of national or religious sentiment may yet be in store for France, to be recorded upon future coinages, it is not for us to prophecy, but those indicated in the past have been neither few nor unimportant, and the author of this record would fain hope that the illustrations pointed out from the past and present coinages may not have been without interest.

LEGENDS UPON THE EDGES OF COINS IN OTHER NATIONS BESIDE FRANCE.

Although the title of the present paper relates only to France, it may not be without interest to review the legends upon the *edge* of other national coins, as their existence in that situation is of comparatively recent introduction.

The earliest instance of such an inscription upon the edge of a coin is on a "pattern" coin of Charles IX, of France (1560-1574), which was inscribed "*Veræ religionis assertori*," but it was not issued as current coin—and Henry III of France also inscribed a "pattern" Ecu, in 1577, with "*Paci, Quieti ac Felicitati publicæ*," and again another, in 1578, with "*Constitutæ rei nummariæ exemplum*" (*a pattern for current coin*) neither of which, however, became current.

ENGLAND—OLIVER CROMWELL, PROTECTOR, 1658.

The earliest piece that has been issued with its edge inscribed was the crown piece of Oliver Cromwell, while

* For the explanation of this see "Some Curiosities of English Coinage," *Proc. Liverpool Lit. and Phil. Soc.*, 1887-8, pp. 325, 326.

Protector in 1658. "*Has nisi periturus mihi adimat nemo.*" *Let no one remove these (letters) from me except on pain of death.* The object was apparently to protect the coin from damage by clipping or filing, the penalty for which, in the case of silver or gold coins, was death in England from Henry V to William IV,* when it was reduced to penal servitude. In the Isle of Man, the penalty for mutilating even the copper coins, which were the only native Manx coinage, was death, by an Act of the House of Keys, passed while James, Fifth Earl of Derby, was practically king, the Earls of Derby, although only officially "Lords of Man," having the power of life and death if supported by the House of Keys.

Edward III made "coining," and some other offences relating to coins, treason, punishable by death; but his Act does not actually name "clipping," and as Criminal Acts have to be interpreted literally, the omission of the words "clipping or filing" left it uncertain whether these offences came under his Act. An Act was therefore passed by Henry V (3 Henry, v., c. 6) mentioning this uncertainty, and specifying the words for the future. By the time of Elizabeth, other means of lightening coins (by means of chemicals, etc.), which were unknown in Henry's time, had been discovered, and accordingly she passed two Acts, (5 Eliz., c. ii, and 18 Eliz., c. i) specifying these offences also, and making them capital.

* The death penalty was repealed by Mary (Tudor) in the first year of her reign. As the Act of Parliament expresses it, "of her clemency and mercy" she wished to lighten the penalties for sundry offences punishable by death, and accordingly repealed former Acts inflicting it. But Elizabeth restored the silver coinage from its debased condition in the three previous reigns to its present purity, and the offence of clipping the new good coins became so common that she was obliged to re-enact the old penalty of death, which she did in the fifth year of her reign.

CHARLES II, ENGLAND, 1662.

The next inscription upon the *edge* of a coin was upon the first crown piece of Charles II, in 1662, after his restoration to the throne. The legend is "Decus et Tutamen" (*Glory and Protection*), which has been continued upon the English crowns until the reign of Queen Victoria in 1845. Since that time the milled edge has replaced the smooth one, and the inscription has disappeared. The words have no reference to any such sentiment as the restored king being the glory and protection of the state, but they were introduced on the suggestion of Evelyn, as he himself tells in his memoirs, as an *ornament* to the crown piece, and a *protection* against clippers or filers. This object is *expressed* upon one single coinage of William III in 1697, in which the words "Protegit et Ornat" are substituted for "Decus et Tutamen."

FRANCE, 1690.

The fashion of an inscription upon the edge having been once set, was followed in other countries, and in 1690, Louis XIV placed the sentimental legend "Domine Salvum fac Regem Christianissimum" upon his Ecu, but the French coinage requires no further notice in this place.

POLAND, 1683.

At this date Poland was still a kingdom, and its king, John Sobieski, who was illustrious for his prowess, had gained great victories over the Turks at the siege of Vienna in 1683, in which year the edge of his thaler is inscribed for the first time "Ingentibus ausis quo vis monstrat iter." *Daring great things where strength shows the way.* This legend is so far incomplete as to leave much to be filled up by the reader's imagination. Judging from the character

of the king, and the circumstances above-mentioned under which it was issued, it would seem to mean that *it is by great and successful daring that a really strong man manifests his character.*

HANOVER, 1693.

HANOVER (formerly Brunswick and Lunenburg), in 1693 adopted on the edge “Das land die fruchte bringt, im Hartz dur thaler klingt.” *The land produces fruit—in the Hartz mine the thaler tinkles.** In 1717, when the Duke of Brunswick had become King of England, this was changed to “Spes Dorothea novas, nova premia largius affert.” *Dorothea brings new hopes and still larger new prizes.* This curious legend, and the Danish ones speaking of Norway and its mines, are upon coins that belong to a considerable class known to numismatists as “Ausbeut,” thalers, which means “profitable” thalers. This term was applied to the money coined, often at the mine, from silver obtained from the various mines as *soon as their working became profitable.* In many of these the king or reigning duke had a direct interest, and the thaler which thus bears Dorothea’s name was made from silver obtained from a silver mine called “Dorothea,” after the Queen Sophia Dorothea, which was situated near Clausthal, at the foot of the Hartz Mountains.

The legends were changed in the time of George II into “Nec aspera terrent,” *rough places do not frighten, or nor do difficulties frighten,* which the coinage retained to its

* The coins bearing this Legend were made from silver obtained from a mine named after Duke Ernest Augustus of Brunswick, and the legend is to record the mine becoming profitable. A similar explanation applies to the Danish coins, which have similar legends. In our own country, the coins made from gold and silver obtained from Wales in the reign of Charles I are all stamped with the Prince of Wales’s plume of feathers, to indicate the source from which the metal came.

final issue in 1848. I have not been able to find what special trouble harrassed Hanover to occasion the change of legend at this time. George II was always engaged in turmoil on the Continent or in England, and he had a long contest with the other electors about his right to retain the title of Arch Treasurer of the Holy Roman Empire, which possessed no treasures for a treasurer to keep, but I cannot learn any special trouble at the date of changing the legend.

HOLLAND has the inscription "God zy met ons," *God is with us.*

BELGIUM has "Dieu protège la Belgique."

SWEDEN, 1670.

In 1670 the king, Charles XI, inscribed "*Circumeundo servat et ornat,*" *by surrounding (me) it protects and adorns (me),* and in 1693 he represents the coin as expressing this object still more definitely by "*Manibus ne Lædar Avaris*" (*that I may not suffer from greedy hands*). This inscription was continued for sixty years, with a single exception in 1721, in which Frederic I substituted the religious sentiment "*Gloria in excelsis Deo.*" The motto in the coinage of King Oscar in 1845 has become simply a record of the value of the coin (75, 100 dolar fin silfver).

DENMARK, 1670.

Christian V, the first hereditary king of Denmark, for the first time inscribed upon the *edge* of the coinage, and the legend was "*Si vigilant alii et me vigilare decet,*" *If others are on the look-out it behoves me also to keep watch,* and a little later, but still in the year of his accession, "*Pietate et Justitia,*" as if to indicate the principles that would guide his rule, which he would appear to have carried out consistently, for he lived beloved and honoured, and "died with

the reputation of one of the greatest monarchs in Europe, having given remarkable proofs of his wisdom in council, of his courage in the field, and of his affability and affection for his people. The Danes recite his virtues to the present day" (*Univ. Hist.* V, 32). In subsequent coinages, 1692–9, the language of the inscription was changed from Latin into Danish, and the following singular inscriptions, of rare occurrence elsewhere, were placed on the edge. It is curious to observe the apparent delight with which the Danish coins dwell upon the mineral riches of the Norwegian mountains, Norway being at that time part of the united kingdom of Denmark and Norway, and it is also interesting to catch glimpses of the confident and loving relations between the king and his people which the inscriptions seem to afford, and which, happily, still subsist.

1687—Hæc Boreas Cymbro fert ornamenta laborum. *These ornaments of our labour the north wind brings from Cymbro* (a mine near Konsbiarg, a mountain village in Norway).

1692—Det Klipperne yder vor Bergman dud bryder hvad Hytten da gyder af mynten vi nyder. *What the rock contains the miner quarries, and in what the smelting-house produces do we rejoice as coined money.*

1694—Saadan Nordens skat Gud gienste til Kong Christian dend femte. *Such a treasure the North kept for the King Christian the Fifth.*

1693—I dette ansigt Dannemark og Norge skuer sin monark. *Denmark and Norway look their monarch in the face.*

1822—Held Kongen Folkets Fader. *Glad the king, the people's father.*

1822—Folkets velfærd, Kongens glæde. *The people's welfare is the king's delight.*

1822—Kongens helbred folkets glæde. *The health of the king is the people's (folks) gladness (delight).*

SPAIN, 1700.

Charles II was the last of the Austrian line of kings of Spain, and he left the kingdom to Phillip V, of the House of Bourbon, who succeeded him in 1700, and gave rise to the long War of Succession. It is strange to contrast the reality with the forecasts of men; for Charles, in his coinage of 1700, the year of his death, inscribed this legend upon the edge of the coinage; "*Sic tuta et tota manebo*"—*so safe and whole shall I remain*—in allusion apparently to the Hispania of which he had been king—which, so far from remaining "whole and safe," became the immediate subject of a civil war of eleven years' duration.

1851—Isabella II, who became Queen of Spain by the abolition of the Salic Law in 1830 by her father, Ferdinand VII, and the Cortes, inscribed on her large coins, in 1851, "Isabella 2^a por gracia de Dios y la *constitucion* Reina de las Hispanias," and on the *edge*, "*Ley. Patria, Rey.*"—the first record of "constitutional" monarchy in Spain, and of Law and the Country coming there before the King.

In 1870 she was deposed for misgovernment—a strange satire on her professions—and Spain passed through an interregnum of a few months until Amadeus, Duke of Aosta, was elected king. During this interval, the *de facto* government for the time issued a coin commemorating the event by the inscription upon its edge, "*Soberania National*," the *National Sovereignty*. Amadeus abdicated in 1873, and was followed, in 1875, by King Alfonso XII, with his legend on the edge, "*Justitia y Libertad*," *Justice and Liberty*, and after his death a coin was issued, in 1888, in the name of his son, Alfonso XIII, at that time only a few months old, which bears his baby effigy on the obverse, and "*Constitutional King of Spain*" on the reverse, but no legend

whatever on the edge, only a ring of stars. He was too young to have opinions, or to have laid down in his own mind the principles upon which he intends to rule.

PRUSSIA, 1701.

The first legend on the edge was “*Principium secli et Regni sors prima coronat*” *The first yield crowns the beginning of the century and of the kingdom.* It was in 1701 that Frederick III, Duke of Prussia, placed the crown upon his own head and assumed the title of Frederick I, King of Prussia, or of Borussia as it was called upon the coinage until 1741, and this coin was struck from mines which then became profitable.

The modern Prussian legend is “Gott mit uns.”

THE MODERN GERMAN EMPIRE, 1870.

The German Emperor's coins of the present dynasty bear simply “Gott mit uns,” *God with us.**

SAXONY.—“Sachsen Gott segne,” *God bless Saxony.*

AUSTRIA, 1707.

The legend of Joseph, 1707, was “*Amore et Timore,*” *by love and fear*, by which he ruled; and the next was by Charles VI, 1719, “*Constanter continet orbem,*” commented upon below.

“*Recta Tueri,*” *To have regard for what is right.* This legend was adopted by the Emperor Ferdinand, 1835, a man

* During the First Napoleon wars, when the German troops gained a battle, a bronze medal was cast from the captured cannon, on which was inscribed “Gott was mit uns—Ihm bei die ehre,” *God was with us, to Him be the Glory.* Such a medal, supplied to every soldier engaged in the last Franco-German war, is the only medal issued to commemorate that momentous struggle and its results. When Prussia, after the fall of Napoleon I, placed a legend on the *edge* of her money, she adopted the three words of the above inscription, and still retains them.

of no great power, but of a just and estimable character. In the revolutionary year of 1848 he resigned the throne both of Austria and Hungary, and retired into Hungary, where he lived to a very advanced age, universally loved and respected.

The modern legend around the edge relates to the dual sovereignty of the Austrian monarch, "*Viribus Unitis*," *with united strength (of Austria and Hungary)*.

HUNGARY, 1740.

The next country to follow suit was Hungary in 1740, when Charles VI, who possessed titles innumerable,* inscribed "*Constanter continet orbem*," *He always embraces the globe*, but the following year, 1741, six feet of earth embraced himself, for he died in that year.

1741—Maria Theresa, Queen of Hungary, inscribed "*Justitia et Clementia*," which was in accord with the character of her reign, and justified the sympathy and confidence of the Hungarian Diet, when it exclaimed, in response to her appeal for help, "*Moriamur pro Rege nostrâ Maria Theresa*."†

* Charles VI (Emperor of the Romans—King of Spain and the Spanish Provinces in America—King of Germany, Hungary, and Bohemia—Archduke of Austria—Duke of Burgundy, Styria, and Silesia—Marchio of Moravia, Count of Tyrol.)

† A story was current at the time of the accession of Queen Victoria, which turned upon this exclamation of the Hungarian Diet. The late judge, Sir John T. Coleridge, was present at a banquet given soon after the Queen's accession, when the chairman, under the mixed influence of old habit and present loyalty, gave the toast, "*The King, God bless her*." The laugh was against him, but Sir John Coleridge came to the rescue and said that his toast was a correct one—that "*king*" was a noun common, though generally used in the masculine, and he appealed to this anecdote and quoted the Diet as combining the "*Rege*" with the feminine "*Nostra*." "*The King is dead—long live the Queen*" would offend all old associations, even though it might be a queen who was to succeed to the throne. We hear the prayer for "*our queen and governour*" continually in the Litany of the Church, which is in strict accordance with the above use of *Rex* for the feminine Queen.

When the Emperor Francis Joseph ascended the throne in 1848, he tried to combine the double monarchy in a centralised Austrian Empire, and chose for his motto "Viribus Unitis," as above. But the Hungarians were proud of their ancient independence, and refused to accept Austrian supremacy, and at length, in 1867, after years of contest, "the reconciliation between Hungary and the Crown took place, and the king was crowned at Budapest, and on the coronation medals struck for the occasion the legend was 'Bizalmam Az osi erenyben,' *My trust (lies) in the Ancestral* (or hereditary) *virtue* (of the Hapsburg family). Since that time the Hungarian coinage puts round the edge of the modern coins the legend as the motto of Francis Joseph."

The CISALPINE REPUBLIC, N. Italy, which existed from 1797 to 1805, placed "Unione e Virtù" on the edge of its short-lived coinage, but, whatever its unity, its strength was small, and it merged in the Kingdom of Italy in 1805, under Napoleon.

ITALY, 1805.

In 1805 Napoleon made himself "King of Italy," and issued coins then and in 1812, with the titles *Imperatore e Re—Regno d'Italia*, and on the edge, in 1812, he inscribed his original French legend, adapted for Italy, "Dio protegge l'Italia."

ITALY, and previously SARDINIA, has now the legend "Fert—Fert—Fert," which is somewhat of a puzzling enigma. It is to be found upon the collars of all knightly orders of the old kingdom of Piedmont, and it was the device of the House of Savoy, which they have used since 1310 in memory of the Duke of Savoy having defended Rhodes against the Saracens. F.E.R.T. is the combination of the first letters of "Fortitudo Ejus Rhodium Tenuit." *His valour kept Rhodes*. It is also said to be a compressed form

of *FilibERT*, one of the kings of the House of Savoy, who was probably the man who did hold (tenuit) the Island of Rhodes.

NAPLES.

Joseph Napoleon, when king in 1806, inscribed "*Custos Regni Deus*," *God is the Keeper of the Kingdom*; and Murat, who succeeded him in 1808, followed Napoleon's original motto still more closely, "*Dio protegge il Regno*."

Ferdinand II, "*Bomba*," inscribed "*Providentia optimi principis*," an estimate of himself that was soon followed by the revolution which terminated his power in 1860.

VENETIAN REPUBLIC, 1848

During the year of revolutions in Europe, 1848, Venice revolted against Austria, and issued a coinage with the inscription on the edge, "*Dio Premiera Costanza*," *God will reward persevering firmness*, but Austria recovered possession of the city after a prolonged siege.

PARMA AND PLACENTIA, 1815.

Maria Louisa, widow of Napoleon, Archduchess of Austria and Grand Duchess of Parma and Placentia by grant from the allies as a provision after the fall of Napoleon, inscribed "*Domine dirige me*" on the edge of her five-lire coin of 1832. This legend seems to possess an interest peculiarly its own. Maria Louisa was the daughter of Francis I, Emperor of Austria, and was brought up, as were other Austrians, in the nursery creed that Napoleon was the devil; and in the royal nursery she and the other children had a doll called Napoleon, which they stuck with pins or otherwise punished when in need of some object upon which to vent their griefs or ill-temper. Napoleon had three times entered Vienna in triumph, or had otherwise

inflicted deep humiliation upon Austria, when, in 1809, he proposed an alliance with Austria to bring him into relations in his greatness with the old crowned heads of Europe. Brought up in the absolutist atmosphere of Austria, she did not think of raising objections, though the alliance was fearful and hateful to her, and they were married with great manifestations of honour and affection on the part of Napoleon. In the French court, however, the Austrian poverty and the old-fashioned style of her trousseau, and her personal gaucheries (in French eyes), and her coldness and hauteur of manner, made her despised at first, and eventually disliked by the brilliant and fashionable French ladies of the court—and the dislike was mutual. Napoleon almost immediately left his wife for the wars again, and throughout her married life she was an isolated unhappy woman. When Napoleon fell in 1814 she declined to accompany him to Elba, nor did she share his banishment in St. Helena.

After his permanent fall the allies granted her the Duchy of Parma and Placentia in lieu of the monarchy she had lost, and she retired there with her chamberlain, Count Niepperg, whom she eventually married, but by whom children were born during Napoleon's life time. Her own family turned away from her, and she was isolated from all her hereditary friends and associations. In 1832, her only son by Napoleon died when just twenty-one years of age, and in that year she inscribed upon the edge of her coin as above stated, "*Domine dirige me.*" When all the circumstances of her sorrowful life are passed in review, this legend sounds sadly like the wail of a broken heart, "*Domine dirige me,*" *God help me.*

THE PAPAL STATES, 1817.

Pius VII inscribed on the edge of his scudi in 1817 "*In terra pax,*" a record of thankfulness for peace on the fall of

Napoleon, who had kept the Pope in confinement at Fontainebleau until his own first fall in 1814.

RUSSIA.—The inscription on the edge of the roubles simply indicates the value of the coin and the period of its mintage.

THE ORDER OF THE BLACK EAGLE OF PRUSSIA.

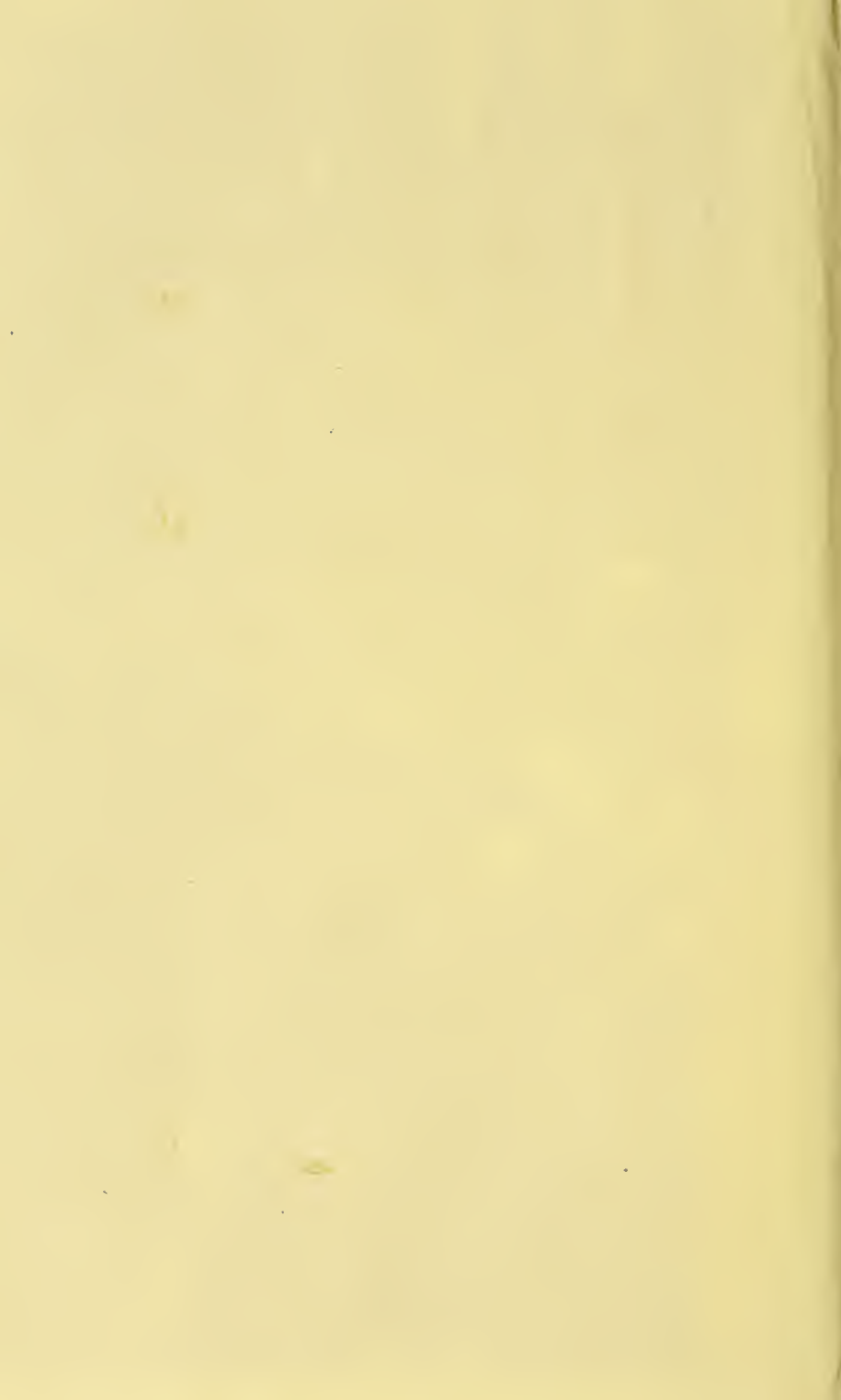
It is so seldom that we have the opportunity of hearing from a monarch himself the interpretation which he places upon a legend of his own choosing, or the reasons which have led him to select it, that the following account possesses exceptional interest as given by Frederick the Great of his interpretation of the motto "*Suum Cuique*," *to every one his own*, which he has inscribed as the legend of the Order of the Black Eagle. And although Prussia is not part of France, nor has her coinage been copied from that of France, it will scarcely be out of place in this paper, which has endeavoured to assign the interpretations of the legends on the French coinage through a period of above two thousand years. The passage must be judged by its inherent interest, and its insertion may perhaps be forgiven.

This order was instituted by Frederick, the first king of Prussia, on his coronation day at Königsberg. "To the eagle," said Frederick I in the foundation chart, "we have given in one of his claws a crown of laurel, in the other the thunderbolts of Jupiter. Above its head we have written our motto '*Suum cuique*' (*to each his own*). The crown signifies the justice of reward, the thunderbolt the justice of punishment, the motto '*Suum cuique*' the absolute impartiality with which we award to each according to his merit. This is not all. The eagle, as all know, looks ever to the sun, he aims at nothing small or low. These qualities are a symbol by which we are instructed, we and our knights, to raise our hope and our confidence to God Most High. The

‘*Suum cuique*’ teaches us that we must render to man what is his due, and to the Most High that which belongs to God.”

The variety of interest, of history, and of sentiment conveyed in many of the above legends, leads one the more to regret that the legend upon the edge of the British crown is so destitute of any meaning deserving of being remembered.

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